Railway Age

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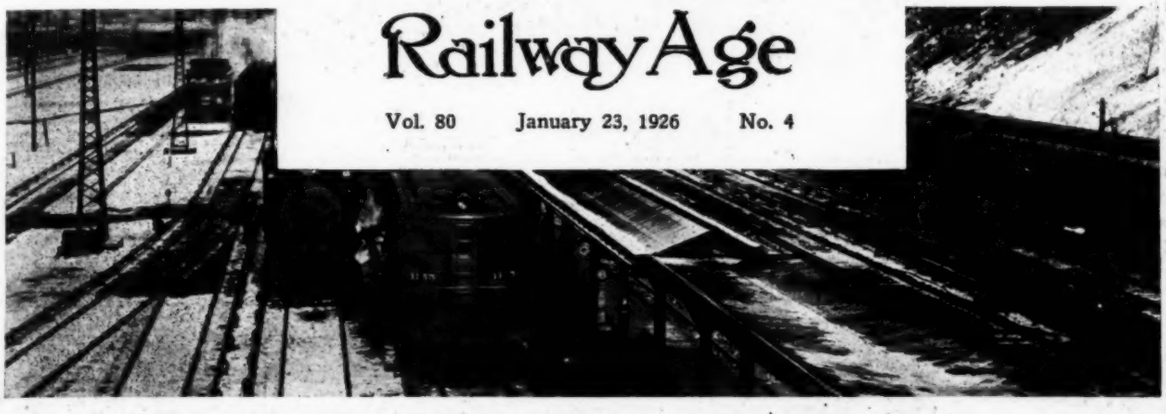

Winter at Harmon, N. Y., Where the N. Y. C. Changes from Steam to Electric Operation—Photo, Ewing Galloway

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Railway Age

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Reduce Cost of Operating Interlockings

SEVERAL roads are making marked savings in the charges for operating interlocking plants by combining the control of two or more separate plants into one machine and thereby reducing the number of levermen required without reducing the safety or flexibility of operation. By installing three desk levers and one remote control switch machine at Bordentown, N. J., the Pennsylvania combined the operation of two interlocking plants and abandoned a seven-lever mechanical machine. At Butler, Wis., the Chicago & North Western abandoned three mechanical interlocking plants and combined the operation of all of the switches, signals and derails in these three layouts into one electric plant centrally located. Likewise, the New York, New Haven & Hartford combined the operation of two interlockings into one at Middleboro, Mass. The modern improvements in electro-mechanical interlocking machines, desk levers and remote control switch machines render operation of outlying junctions and crossings practical, in some cases up to five and even eight miles from the point of control. Such combinations and extensions of control limits for interlockings result in operating economy. The wages for one leverman on each of the three tricks, together with fuel, light, supervision and incidentals for an average interlocking, is approximately $5,000 a year; therefore, each separate plant eliminated should show an annual saving equal to this amount, providing the number of employees is proportionately reduced.

"Only a Monkey Wrench!"

IT is a notorious fact that the average railway man has little appreciation of the dollars and cents value of the tools with which he works. The vital necessity of conserving these tools by careful use and preventing their loss usually is not strongly impressed on him. Can it be doubted that if the facts regarding the real cost of machinery, tools and material, as well, are represented to the men in the proper manner, most of them will respond and thus effect savings which in the aggregate must be large? To get the facts before the men, the Kansas City Southern recently took two-thirds of a page in its monthly mechanical and transportation department papers to broadcast a statement entitled, "Only a monkey wrench!" The statement was printed in large type and given a prominent position. It showed (1), that a 15-in. monkey wrench costs the company about $1.47, (2), that for every pound of freight hauled one mile, this railroad receives one cent and nine-tenths of a mill, or expressed in figures, $0.0109, (3), that in order to earn the price of the 15-in. monkey wrench it is necessary to haul one ton of freight 133 miles. The statement closed with an appeal to the employees to appreciate how much transportation the railroad must sell in order to take in enough money to pay for tools, and asked the co-operation of every one in a saving campaign which has been inaugurated on that road. This sort of publicity work cannot be other than effective. Bulletin boards, employees' magazines and every other possible means should be used to provide employees with information regarding the cost of tools. It would also be well to include figures on the cost of locomotives and cars, and thus give the men an idea of what it means to delay this equipment longer than absolutely necessary to condition it for further service.

The Ramp and the Elevator

THE ramp is unquestionably the oldest and most obvious means of moving men, animals or inanimate objects from one elevation to another. Without the ramp the pyramids would have been impossible. Next came the stairway and finally, with the development of mechanical devices, the hoist. It was the elaboration of the latter in the form of a practical elevator that made the multiple story warehouse economically possible, and so long as the transport of goods within buildings was carried on by hand labor the elevator suffered no competition from the ramp for, whereas, hand trucking on horizontal surfaces imposes no particular difficulties, trucking up or even down inclined planes imposes reductions in the unit load which can be handled by either man or animals. However, with the introduction of power for the operation of industrial trucks or street vehicles the ramp has experienced a new lease of life and is becoming a competitor of the elevator particularly where trains of tractors and trailers are employed. It possesses a primary advantage in that it permits a continuity of movement. The load is transferred without interruption from the street or from any point on one floor to any desired location on another floor without break in bulk or transfer of the load from one attendant to another. Furthermore, the use of a ramp of sufficient width for two lanes of traffic insures a continuity of operation under which one load may follow another without the interruption which attends the use of elevators wherein the handling of one load must be entirely completed before the hoisting or lowering of another load can be undertaken. The particular shortcoming of the ramp is that it permits little opportunity for flexibility of capacity. Elevator capacity may be increased by the addition of new units with increasing demand or the addition of more stories to a building. This is not possible with a ramp, for even where constructed to the minimum dimensions it would in many cases provide far more capacity than is necessary and in the vast majority of cases would occupy far more space than that needed to accommodate the necessary elevators needed to meet reasonable rquirements. In view of these various considerations it is of interest to note that the Chicago, Burlington & Quincy storehouse at Aurora, Ill., described elsewhere in this issue, is pro-

vided with ramps rather than elevators. This is of interest not only from the standpoint of their applicability to warehouse or stores buildings, but also with regard to the possibility of their adaptation in two-level freight-houses.

Letter and Spirit in Labor Legislation

THE counsel of the National Association of Manufacturers, James A. Emery, has sent to members of this organization and presented to the Senate Committee on Interstate Commerce, a keen and able criticism of the railway labor bill upon which representatives of the railway executives and the railway labor unions have agreed. A quotation from the Scriptures seems applicable to the present case: "Not of the letter, but the spirit," it is said in Corinthians, "for the letter killeth, but the spirit giveth life."

Mr. Emery's criticisms of the letter of the bill seem just. Among them are the following: First, "the terms of the proposal which ostensibly authorizes the President to investigate an unadjusted dispute threatening a substantial interruption of transportation are ambiguous, uncertain and inadequate." Second, the repeal of the labor provisions of the Transportation Act would "deprive the public of vital protection afforded by the provision empowering the Labor Board to suspend and review any agreement between the carriers and their employees respecting wages which, in the opinion of the board, would require an increase in rates, and the further provision that any decision of the board respecting wages or salaries must be concurred in by one representative of the public." Third, the provision in the new bill, "Nor shall anything in this act be construed to make the quitting of his labor or service by an employee an illegal act," and its prohibition of any court, federal or state, issuing any process to compel the performance of any such labor or service, not only seems plainly to recognize the right to strike, but must be intended to limit the power of the federal and state courts, for, otherwise, there would be no reason for putting it in.

Mr. Emery's comments illustrate and emphasize the truth of the statement made in an editorial in the *Railway Age* last week that, "Theoretically, the labor provisions of the Transportation Act are far superior to those of this new measure." In its actual operation the Transportation Act has in a difficult period of readjustment usually promoted peaceful settlements of labor disputes. If it has done any injustice it has not been to employees, because it has afforded them a tribunal for the full hearing of their complaints, wishes and views, and has resulted in their being given during the last five years the most favorable wages and working conditions they have ever had. If there has been any injustice it has been done to the railway companies, which, from rates that have been no higher relatively than commodity prices, have had to pay wages relatively much higher, and in consequence have earned relatively the smallest net returns in any five-year period in history.

Meantime, however, railway labor leaders constantly have tried to get the provisions creating the Railroad Labor Board repealed. The main reasons they have done so probably are: first, that although the Labor Board in 1920 awarded a large advance in wages, it subsequently did something that never had been done before—namely, awarded reductions of wages; and, secondly, that the labor leaders believed the existence of the board and representation of the public on it reduced their power to exert "economic pressure" upon the railways. The unwillingness of the labor leaders to accept and act in accordance with the labor provisions finally resulted in the first nationwide railway strike in the country's history, and in the engine service employees, by threats of strikes, getting, in disregard of a decision of the Labor Board, an advance in wages which, in western territory, directly tended to make necessary an advance in rates. The Labor Board never took any steps to suspend or even review this advance in wages, although there appeared to be as strong reasons why it should do so as there ever could be in any case.

The opposition of the labor leaders to the labor provisions of the Transportation Act also led to their advocacy of the Howell-Barkley bill, which was almost passed, and which would have placed the railways and public at the mercy of the labor leaders.

Now, accepting the view that the letter of the provisions of the Transportation Act is far superior to the letter of the provisions of what is becoming known as the Watson-Parker bill, let us consider the spirit that has been and is being manifested by the railway executives and the labor leaders regarding the Watson-Parker bill. In view of experience in the past fifteen years, there can be little question that if the new measure should be passed the railway executives would not only accept but insist upon arbitration under it in all important disputes. Both their spokesmen and those of the labor unions in the hearings upon the bill have emphasized the fact that if Congress passes it, in compliance with their joint request, they will assume an especial duty to the public to carry it out in the spirit in which they have jointly written it. W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, expressed it as "his honest belief that any dispute that may arise can be settled under the provisions of the bill," and that the moral obligation on the parties who framed it will insure industrial peace while amply protecting the public interest.

Donald R. Richberg, counsel for the Associated Railroad Labor Organizations, in an article published in Labor, their weekly newspaper has said: "It is the theory of this proposed law that if a railroad and its employees cannot settle a dispute in conference, or through an adjustment board, or with the aid of government mediation they will, after exhausting all these efforts, *deem it desirable and in their best interest to submit the controversy to arbitration,* since the law gives the assurance of an impartial board, a fair hearing and the enforcement of the award." Since Mr. Richberg was speaking in his official capacity and in the official newspaper of the railroad labor unions, this must be construed as definitely committing the labor unions to arbitration, under the proposed legislation, of disputes that cannot otherwise be settled by negotiations. In case a settlement is not reached by any other means the bill provides for the appointment by the President of an investigating board to represent the public only. It hardly seems probable that either the railways or the employees would refuse to testify before such a board after they had agreed upon and asked Congress to pass legislation creating it.

It must be admitted that all discussions as to what would occur under the proposed legislation is speculative. Mr. Emery appeals to the record of the past. That record is unanswerable. It is no answer to it to ridicule Mr. Emery as a representative of the public interest, as Mr. Richberg did, and say his representation is clearly that of a group of private interests which do not accept obligations of public service. The record conclusively proves that the more powerful labor unions have repeatedly in the past refused arbitration under the very conditions.

forms and methods under which it is provided for in this proposed legislation. While willing in 1914 to arbitrate under the Newlands Act demands made by themselves, the representatives of the engineers and firemen refused to arbitrate demands made by the railways, and, after President Wilson had wired for a conference in Washington, issued a strike order before they started to see him. Likewise, in 1916 the four train service brotherhoods absolutely refused to arbitrate under the Newlands Act and issued an order for a nationwide strike and kept it in effect until Congress hastily passed the Adamson Act. The spokesmen of organizations with such a record are in no position consistently to criticise any other organization for ignoring the public interest, or for questioning whether the labor organizations that refused to arbitrate under the Newlands Act will accept arbitration under the Watson-Parker Act.

But the attitude and spirit of men, including labor leaders, do change. Furthermore, there are among the railway labor leaders men who have been less radical and reckless than most of their associates. For example, President W. G. Lee and Vice-President W. N. Doak of the Brotherhood of Railroad Trainmen almost always have been reasonable and public spirited in what they have said and done. Other railway labor leaders may realize that their past radicalism and reckless disregard of public opinion and the public interest have made their organizations extremely unpopular throughout the country. At any rate, while still seeking the repeal of the labor provisions of the Transportation Act, they have agreed to a bill which is more reasonable and better adapted to protecting the public interest than any other to which they ever have agreed. Furthermore, they have through their spokesmen unreservedly recognized the fact that if it is passed they and the railways will have assumed a moral obligation to make it work in the interest of peace and the public welfare.

Will it not be better for the public to accept this measure in spite of its defects of principle, and thereby put upon those who sponsor it the moral responsibility of making it work well, than to keep in effect or adopt legislation which in the letter will be better, but which will be sure to cause a spirit of determined antagonism among labor leaders that will make it difficult or impossible to get good results under it?

Political Interference With Regulation

THE most serious menace to the success of railway regulation is the incessant efforts made to use it as a means of furthering political purposes. The number of these efforts is constantly increasing. They take the form both of attempts to get men upon the Interstate Commerce Commission who will decide cases as certain politicians want them to, and of attempts, when cases are not, or it is feared will not be, thus decided, to secure legislation which will deprive the Commission of power to decide otherwise.

We have recently witnessed the unprecedented spectacle of a Senate committee calling before it Thomas F. Woodlock and R. V. Taylor, who had been nominated by the President for membership on the Commission and, interrogating them for the express purpose of trying to ascertain how they would vote regarding questions that are certain to arise before the Commission. This was done because, Mr. Woodlock having been an editor of a New York paper and Mr. Taylor having been a railway officer, they were suspected by certain radical politicians of not holding views adverse to the railways.

It is significant that certain other nominees for the Commission were not, before confirmation, similarly interrogated by the Senate committee. One of these was Joseph B. Eastman, who was well-known when nominated to be an advocate of government ownership of railways. Another was Frederick I. Cox, who was nominated, it was announced, as a representative of the commercial travellers who were advocating abolition of the Pullman surcharge. Another was Frank McManamay who had long been prominent as a representative of railway labor unions that were seeking government ownership and who held a high place in the councils of W. G. McAdoo when he was operating the railways. Still another was Johnston B. Campbell, who was well-known to have long been a leader in the warfare against the railways carried on by certain interests in the western intermountain territory.

Why were these men not called before committees of Congress and questioned before their confirmation regarding views they were known to hold which plainly made it highly improbable that they would be able to think and vote without anti-railway bias on important matters that were certain to come before the Commission? The obvious purpose of those who so graciously refrained from questioning these four men, but who insisted on questioning Messrs. Woodlock and Taylor, was to try to make sure that no man would get on the Commission who would begin his work without bias against the railways at least regarding some matters on which it would have to decide.

The Gooding bill now pending in Congress is a fine example of the efforts made by certain politicians to get the railways regulated to suit them regardless of sound economics or the public welfare. The Interstate Commerce Commission now has delegated to it authority to determine in the public interest when and where a lower rate may be made for a longer than for a shorter haul. What the Gooding bill would do would be to deprive the commission of this authority. Thus, by legislation, the advocates of the Gooding bill would absolutely fix the relations between rates to the intermountain territory and the Pacific coast in order to make sure that the Commission, which was created to fix all relations between rates, would not fix them in this instance contrary to the political views and interests of the promoters of this legislation.

The Hoch-Smith resolution adopted at the last session of Congress is another fine example of such legislation. The Act to Regulate Commerce directs the Commission to make the rates on different commodities and between different territories and communities reasonably and without unfair discrimination.

The Hoch-Smith resolution undertook to instruct the Commission how to fix the relations between the rates on different commodities for the plain purpose of trying to force the Commission to make them in a way that would be unreasonable and unfairly discriminatory.

The problems of railway regulation are of extreme difficulty and gigantic importance. They are economic problems which can be solved in the public interest only by a body of men able, impartial, learned in economic and transportation matters, and untrammeled by political legislation. It will take a long time, indeed, to make regulation fair, constructive and beneficial if reckless, self-seeking politicians persist in trying to make sure that no man is appointed to the Commission who is not biased against the railways, and, when they fear the Commission will not decide to suit them, in seeking legislation that will prevent it from deciding according to its knowledge and judgment.

How to Make It Pay

THE question has been asked as to whether the railways are justified in going to the expense of sending boys and young men to a national conference, such as the Younger Railroad Men's Conference which was recently held at Pittsburgh. Judging from the enthusiastic expressions of railway officers who took part in the conference, there is no question in their minds as to its practical value. In the last analysis, however, the value of such a meeting must be judged on the basis of practical results which follow the return of the boys and young men to their everyday tasks. Are they better workers and are they following up the inspiration received at the conference in studying to prepare themselves for more important places in the organization? To what extent are they influencing their fellows in a helpful way, and are they better citizens because of having attended the conference?

A few evidences of practical results from the Detroit conference, which was held in the fall of 1924, were pointed out in an address which was made at the convention of the International Railway General Foremen's Association, held in Chicago last September, and reported in the *Railway Age* of September 19, 1925, page 514. As a result also of the Detroit conference, the Chesapeake & Ohio and Hocking Valley held a younger men's conference in April, 1925. An effort was made to follow up and help each of these boys when he returned to his job, and a recent survey indicates that a very large percentage of the young men have made distinct progress in studying to fit themselves for better positions. Some of them are attending night schools, others are taking correspondence school courses, and others have been transferred to work for which they are better adapted. Further evidences of the value of these conferences were indicated by the young men from the Lehigh Valley and the Chesapeake & Ohio, who spoke at the "Younger Men's Night" of the New York Railroad Club, an account of which meeting appeared in the *Railway Age* of October 31, 1925, page 795.

The Pittsburgh Younger Railroad Men's Conference was the third of its kind to be held and it promises to be more effective in the way of practical results than either of the two preceding meetings. This is not surprising, for naturally, based upon previous experiences, it was possible to considerably improve the technique of handling the conference, and apparently also a distinct effort was made to use more care in the selection of delegates, picking young men who not only could profit individually to the greatest possible extent, but could carry back and interpret the message to their fellows at home. Several important reactions have already occurred. For instance, one of the vice-presidents of the Younger Men's Conference addressed the Pacific Railway Club in December on the benefits of the Pittsburgh conference. Then, too, a number of American Railway Employed Boys Clubs, or similar organizations, are being formed.

An unusual and very effective way of conserving the results of the Pittsburgh conference was tried out by the Parsons Katy Apprentice Club at its second annual Christmas banquet, which was held at Parsons, Kan., last month. In this case the young men who attended the Pittsburgh meeting reproduced the high spots in the Pittsburgh conference in the way of a "mock conference." They gave in their own way, the principal addresses which were made at Pittsburgh and even went so far as to reproduce the vocational counseling groups. In addition, a number of the young men told of the impressions received at the Pittsburgh conference and short talks were made by several of the officers of the railroad, including Vice-President Whitenton and Mechanical Superintendent Warden.

It is these things that will greatly multiply the value of the Pittsburgh conference, and special efforts should be made to encourage and help the young men to take the initiative in interpreting and getting over the spirit of the conference to their fellows in a big way.

Balancing the Material Balance

DURING the last two or three years much attention has been directed to the handling and control of the material and supplies that are required for operating, maintaining and improving railway properties. It is probable that there has never been a period in American transportation when the interest taken by managements in questions pertaining to material has been as real, keen and widespread. In contrast with periods within recollection, when a storehouse was a warehouse and the material in it, under it, on it or somewhere else on the property was at best a subject of infrequent discussion and little appeal, the provisioning side of the railway business has come to occupy a place where the importance of its management now overshadows that of branches of work which formerly overshadowed it. The evidence of this is found in the revolutionary improvements that have not only been allowed but encouraged in the facilities and methods of handling material since war days, and the accomplishments made in eliminating surplus and obsolete material and in the reduction of stock. It is safe to assert that the future will see this interest in material and supplies spread and intensify.

That there is a sound basis for this interest is found in the rapidity with which surplus stock accumulates and the amount of capital it can divert from useful channels when it is not watched carefully. Railway employees are usually impressed with a new or renewed sense of the magnitude of their business and the vital factor it constitutes in the everyday life of the country, when, among other things, they learn that American railroads consume over 25 per cent of all the coal mined in this country, 20 per cent of all the fuel oil, and 15 per cent of all the lumber cut—that they spend each year in the neighborhood of $500,000,000 for iron and steel products and that they spend about $1,500,000,000 for all of the 50,000 or more items of supplies acquired each year for maintenance and operation alone; or, as it was said recently, a sum equivalent to $1,533 every hour from the moment of the opening of the world's first railroad 100 years ago.

It usually impresses employees also to learn that the purchases which their railroad must make call for expenditures which range from 25 cents to 35 cents of every dollar of the revenue and from 30 to 40 cents or more of every dollar of the operating expense.

It is of much greater importance to the efficient operation of the railroad, however, that all those who use material should know that the value of the amount of unapplied stock on the shelves of their storehouses or in their rail or lumber yards at the end of each month usually exceeds the total operating expenses of that month and not infrequently is greater than the total money earned during the month. With the knowledge of this it is not at all surprising that railroads should manifest as keen interest in reducing stocks of material as the users of material are in getting it. It is only by so doing that material balances can be kept in balance and that working capital can be kept at work. Under the circumstances, users of material will render a service by recognizing the economic fallacy of excessive material

surpluses and co-operating sympathetically in keeping the stock down. It will prove interesting to see what the new year will accomplish in this direction, particularly since much still remains to be done.

Grade Reduction—A Neglected Opportunity

ONE of the interesting things about a railway is the fact that it is never finished. Individual units may be completed, but the property as a whole is in a constant state of development. This is a result of the steady expansion of the industrial life of the country and the growing demands for service which make necessary enlargements to provide the required capacity. Even more, this condition warrants the constant modernization of facilities to take advantage of economies made possible by the growing traffic.

It is the duty of the railways to provide sufficient capacity to meet the demands of their patrons for service. This, however, is not enough. The public has a right to expect that this service will be provided with the maximum economy. This usually falls far below the capacity of a line. In other words, as the capacity of a line is approached the cost of operation rises.

Marked progress has been made by the roads during recent years in the substitution of more efficient locomotives for earlier types, in the installation of signals and interlocking and in the provision of other facilities which have enabled heavier trains to be handled more rapidly. At the same time relatively little attention, comparatively speaking, has been given to the modernization of the very foundation of the railroad—the roadbed itself. C. A. Morse has rendered a constructive service by calling attention to this fact in the paper which he presented before the Western Society of Engineers, Chicago, this week and which is abstracted on a following page. In that paper he calls attention to the present practice of operating modern equipment on tracks of modern construction on lines of gradient and curvature standards of a half century ago.

James J. Hill was a pioneer in the recognition of the value of low grade lines. To him is attributed the statement that since railway revenues are measured in ton-miles and railway expenses in train-miles he endeavored to secure the maximum number of ton-miles per train-mile. Mr. Morse presents an interesting yardstick or measure of the value of low grade lines and light curves by showing that a road with a traffic of 14,000 tons each way per day is warranted in spending approximately one million dollars per mile for each 0.1 per cent that it is possible to reduce the ruling grade over an engine district, and a quarter of a million dollars per mile of distance eliminated.

An important consideration in the contemplation of expenditures for realignment and grade reduction is the fact that money spent for this purpose never wears out or requires replacement, but continues to yield returns for all time, and that these returns are collected every time a train passes over the line. Furthermore, while these returns increase with the density of traffic it is not necessary to wait until the capacity of a line is approached before a reasonable return is possible.

The needs for additional tracks, modern coaling and water stations and a wide variety of other equipment are apparent from casual consideration. The economy of grade reduction is determined only by careful analysis of the cost of train operation. Because of this fact it has been largely overlooked, at least until such time as the capacity of the line is approached and reconstruction is being considered. Engineering and operating officers can contribute no greater service to the reduction of transportation costs than by studying the cost of handling traffic on their various lines of moderately heavy traffic to determine whether the present business and that which may reasonably be expected within the next few years may not be sufficient to insure large economies from expenditures for the improvement of these lines. These officers can afford to keep well in advance of the immediate necessities of their properties in order that they may be prepared to employ any funds that may become available to secure the largest possible returns from their expenditures.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Acid-Resisting Metals, by Sidney J. Tungay. Presents information on metals for use in construction when resistance to action of corrosive liquids and gases must be considered, including results of experiences during European War and post-war years. 136 p. Pub. by Van Nostrand, New York. $2.00.

A Century of Progress. History of the Delaware & Hudson Company, 1823-1923. Illustrated. "Addendum," p. 595-610, brings the history down to 1925. 755 p. Pub. by The Delaware & Hudson Co., New York.

Fertilizers, by Harry A. Curtis. An analysis of the industry. "The freight item in delivered price," p. 22 U. S. Dept. of Commerce. Trade Information Bulletin 372. 23 p. Pub. by Govt. Print. Off., Washington, D. C. 10 cents.

Final Protocol of the Locarno Conference, 1925 *and Treaties Between France and Poland and France and Czechoslovakia.* A pocket-sized edition of the Locarno pact with the text in French and English. Pub. no. 216, Carnegie Endowment for International Peace, Div. of Intercourse and Education. 92 p. Pub. by the Endowment, New York City. 5 cents.

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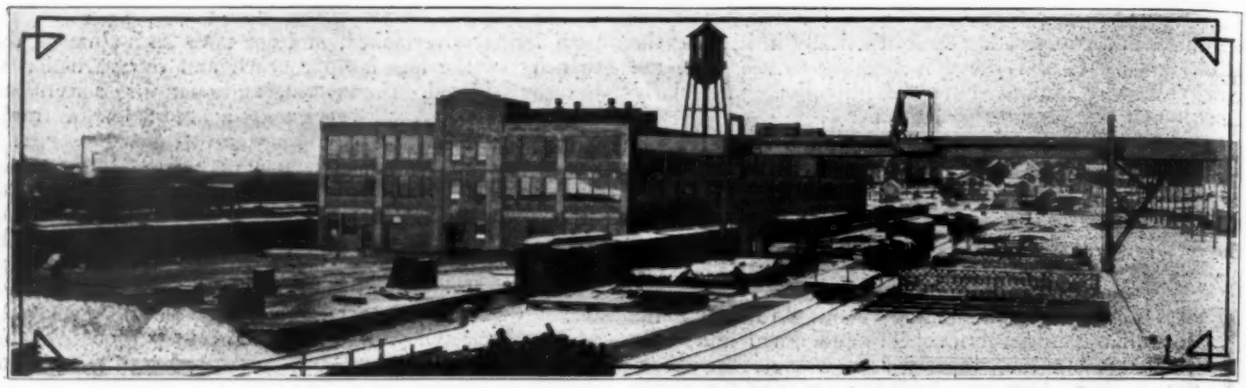
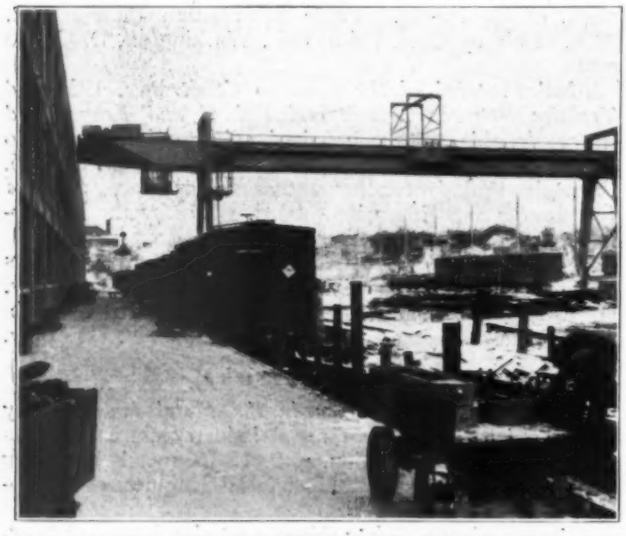


The New Storehouse at Aurora, Ill., Before Complete Occupancy

Burlington Opens Half Million Dollar Storehouse

Ramps take place of elevators in new three-story structure—Building assures large economies

WHEN the Chicago, Burlington & Quincy undertook its work of grade separation through the business center of Aurora, Ill., several years ago it had the building of a new general storehouse in contemplation as one of the major improvements resulting from the removal of the old yard tracks from that city.



Along the East Side of the Storehouse. Note the Over-hang of the Crane and the Light Reflectors Along the Wall

This plan was finally consummated on December 5, 1925, when this facility was completed and the work of moving the contents of the old storehouse into it begun. This new storehouse, in which a new testing laboratory is also located, is the largest of its kind in the west. Approximately $500,000 is represented by the investment in the plant, which comprises a three-story reinforced concrete building 102 ft. wide and 524 ft. long, with which are included a traveling gantry crane and three miles of concrete highways. The building, which has been under construction since last May, departs from the conventional railway storehouse in the predominance of windows, but its construction is of special interest because of the introduction of ramps in place of elevators for reaching the upper floors. Automatic sprinkler equipment, telephones of the latest type, motor transport service and the elimination of hand trucks also characterize the facility, which is expected to repay its cost within a few years through economies in the handling of material, in reductions in stock and fire insurance charges, etc., while additional savings are anticipated through more advantageous conditions for the purchase of supplies.

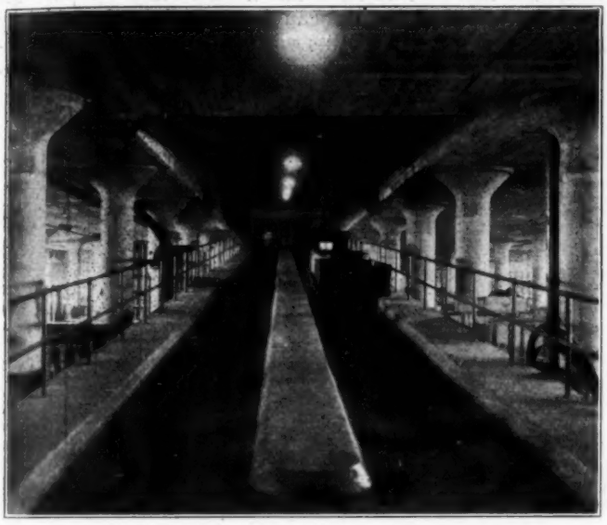
Old Facilities Antiquated and Inadequate

The principal consideration leading to the building of the new plant was the inadequacy of the existing facilities at Aurora. During the last decade the Burlington has invested large sums for the improvement and expansion of the facilities for handling material and supplies. Several buildings have been erected and marked advances made in modernizing the interior arrangements and operation at many places. The general storehouse of the lines west at Havelock, Neb., though built several years ago, a new reclamation plant at Eola, Ill., described in the *Railway Age* of April 12, 1924, and the new store at Denver, Colo., mentioned in the *Railway Age* of October 6, 1923, are among the more important examples of the recent improvements. While all these improvements were taking place, however, physical conditions at Aurora, which is the large supply depot for the lines east of the Missouri river, remained much as they were.

The old storehouse had been entirely destroyed by fire May 12, 1923, and pending the construction of the new storehouse the only facilities at Aurora, except for the lumber yard, were a group of temporary frame buildings hemmed in between shop and yard tracks. The cramped quarters placed serious limitations on the stock which could be carried and also upon its economic handling, though the full inside height of the buildings and all other space were utilized to the best advantage. Cost

studies involving 100 separate items of stock indicated that approximately $60,000 a year could be saved in store expense alone by thoroughly modern methods of handling material. Aside from the foregoing handicaps the old buildings constituted a serious fire hazard, not only to the contents, but also to the shop buildings.

Aurora is one of the principal shop points on the Burlington and a point of large car building operations. Since the proximity of the storehouse to the shops was a decided obstruction to their expansion, the proposal to build the



Looking Up to the Second Floor Along the Ramp

storehouse in a new location offered the most desirable solution of this problem also. In addition it offered an opportunity to design a facility which would provide accommodations for a new testing laboratory and which would be adapted to the introduction of certain innovations in store department work, principally the perfection of a terminal transportation service and the concentration of the repair of electrical and signaling apparatus.

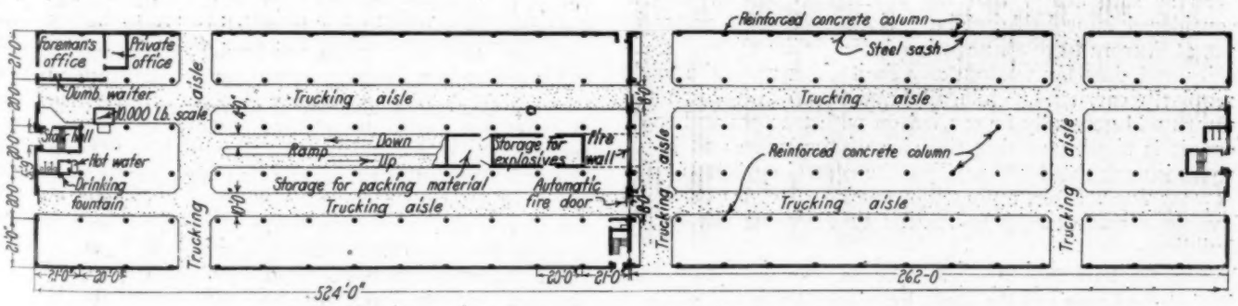
Platform and Material Yard on Same Level

The new storehouse and testing laboratory is situated about 500 ft. from the site of the shops and the old storehouse on ground previously occupied by the freight classification yard and by the main tracks. From the outside, the building resembles a modern industrial plant. It is essentially a flat-roofed rectangular structure of reinforced concrete construction, in which the outside faces of the concrete girders and columns are left exposed while the intervening wall spaces are occupied by windows above low curtain walls of brick.

This building, which is 102 ft. wide, 524 ft. long and 39 ft. high, and the concrete platforms which surround it, occupy one side of the area, while a material yard served by a traveling gantry crane occupies the other. The width of the combined area from one extreme to the other is 300 ft., while the available area lengthwise is approximately 1,000 ft. This area was practically level from north to south, while from east to west it was level over about half of the distance, beyond which it sloped downward sufficiently to create a difference in elevation of 11 ft. between the east and west sides. Advantage was taken of this condition to place the building on the west or low side of the area, so that, with a minimum of excavation and foundation, it could be erected with its platforms both car-door high and level with the material yard. The only problem presented by this plan was that of securing a car door height for the platform between the store platform and material yard, which was accomplished by depressing the track. A concrete wall extending the length of this track on one side supports the platform floor while a similar wall on the opposite side of the track forms a curbing for the material yard and a foundation for one of the crane runways. There was no occasion to depress the third track serving this area, which extends down the center of the material yard beneath the crane. The effect of this arrangement was both to reduce the cost of construction and to provide an efficient operating arrangement.

The concrete platforms are 130 ft. wide and 216 ft. long in front and at the rear of the building and 14 ft. wide at each side. By constructing the plant in the manner described, these platforms, except along the loading and unloading tracks, are virtually established at ground level where trucks or vehicles of any description can reach them by running up a slight incline at each end. These platforms are available for material which can be left out of doors, as well as for all transfer work, while all heavy castings, tiers, truck bolsters, etc., are stored under the gantry crane, where skids of rail supported on portable concrete footings are built between tracks.

The gantry crane is a structure of 10 tons capacity which has a clean span of 105 ft. between runways and an overhang of 28 ft. 6 in. on the storehouse side and 38 ft. on the other end. It is equipped with a 10 ton hoist and a 5 ton auxiliary hoist, both adapted to handle a magnet. The overhang on the storehouse side extends across the track and over the storehouse platform, which permits the crane to serve the storehouse as well as the material yard, either for loading cars or for transferring material from one point to another on the platform or from the platform to the material yard, and vice versa. For this purpose the crane runways extend the entire length of the platform, a total distance of 956 ft. The crane operates at a maximum speed of 350 ft. per min. lengthwise



The First Floor Plan, Showing the Position of Aisleways and Ramp

of the dock, while the lifting and cross speeds are, respectively, 50 to 100 ft. per min. and 300 ft. per min.

The interior of the storehouse comprises essentially three large rooms formed by floors of flat slab construction nine inches thick, supported on circular concrete columns 20 in. in diameter and 20 ft. apart, center to center. These columns and a brick firewall located midway in the length of the building, constitute the only obstructions from one end of the building to the other, with the exception of the ramps. The building is well lighted by the continuous line of steel sash in the walls aided by the continuity of the ceiling surfaces resulting from the use of the flat slab floor construction which dispenses with depending beams or girders. The floors are 11½ and 12 ft. high.

Ramps Provide Access to Upper Floors

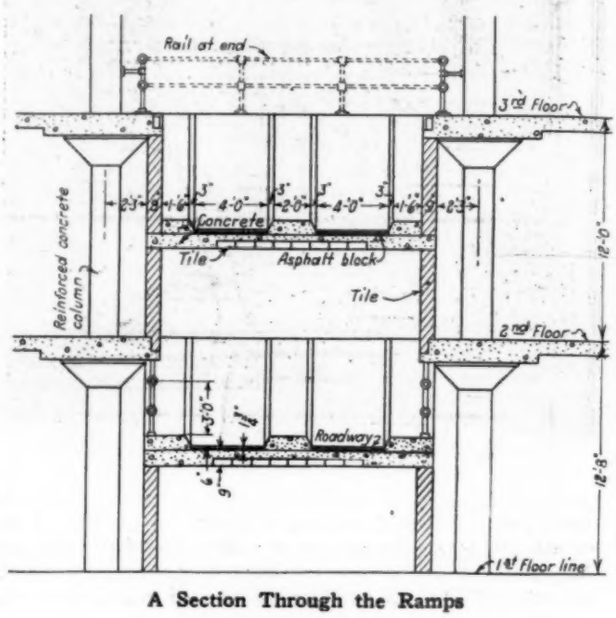
The outstanding feature of this building is the method by which material is carried from one floor to another. All told, there are four rows of columns in the building, counting from one side to the other. The ramps occupy the entire width between the center rows of columns in the forward half of the house. The first floor ramp begins at a point 80 ft. from the front of the building and rises on a 6½ per cent grade to its intersection with the second floor at the fire wall, the total incline distance being 180 ft. The second floor ramp is built over the first, thus providing headroom for vehicles negotiating the first floor ramp. Each ramp provides two wheel paths, one for ascending and another for descending movements. These wheel paths are 4 ft. wide and are separated by a curb 6 in. high and 2 ft. wide for the purpose of keeping vehicles from colliding with each other and to provide at the same time a walk for pedestrians. Similar curbs 18 in. wide follow the sides of the ramps, where iron railings are also provided as a safety precaution.

The ramps were selected only after careful studies had led to the conclusion that they were preferable to elevators in meeting the special problems of the new storehouse. A highly influential, if not a determining factor in the final decision, was the desirability of providing a method of communication between floors that would permit tractors to haul any number of trailers through to destination without interruption. When the floors were designed provision was made for elevators in case the ramps were not satisfactory, but, while the building is not yet fully occupied, the operation of the ramps has been so satisfactory that the installation of elevators is considered improbable. The various types of tractors in use at Aurora have all negotiated the incline without difficulty and thus far without any limitations upon the loads regularly carried. While all haulage up and down the ramps will generally be carried on with tractors and trailers, it is significant that the size of the ramp and headroom is such that by straddling the central curb it is quite as easy for a 3 ton automobile truck to run up or down the slope and thereby to reach any desired point in the building.

The ramps constitute highways between the floors. By way of further facilitating the movement of tractors through the house, definite roadways are also laid out on each floor, two main aisles being provided the length of the building on each level with cross aisles at the ends and center. These roadways are 10 ft. wide and while level with the rest of the floor are paved with asphaltum block to protect the floor from wear.

There are six entrances to the building for tractors and trailers, two openings 8 ft. square at the end each equipped with sliding steel doors and two openings 14 ft. wide and 8 ft. high on the sides, each equipped with a rolling steel door. In each case these doors are in a direct line with the longitudinal or cross roadways on the first floor, thus requiring trucks to turn only when mounting the ramp. Doorways for pedestrians are also provided at each end and at the center of each side wall where stairs are built for reaching the upper floors and offices.

The entire building is of fireproof construction, including the material racks which are of pressed steel of the partitionless type. As additional precautions, fire escapes are attached to the sides of the building opposite the staircases and a complete automatic sprinkler equipment is installed. The structure can be well lighted artificially when necessary, drop lights with individual switches having been installed between the material racks, supplemented by lights in the aisles which can all be lighted at one time, or in different combinations as required, while reflectors are attached to the outside of the building for lighting the platforms. An office for the general foreman is provided on the first floor, while the storekeeper's offices are on the second floor, where a meeting room for holding staff and educational meetings is also provided. The warehouse, as well as the offices, are steam heated from wall type radiators along the side walls under the windows.



A Section Through the Ramps

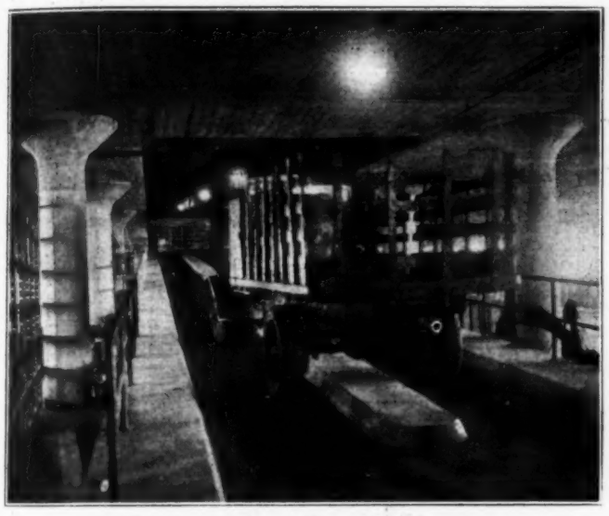
A Complete Testing Laboratory Included

In its completed form this building will be the center of four distinct branches of work. The testing laboratory, in charge of the engineer of tests, is located in the forward 100 ft. of the top floor, where skylighting, roof ventilation and special plumbing have been provided to meet the requirements of a thoroughly modern facility, which will comprise a laboratory for general chemical analyses, a paint and oil laboratory, a metallurgical laboratory, a photography room, a cement laboratory and a laboratory for general physical tests, with adequate storerooms and an appropriate library and offices. These quarters are being occupied at the present time.

No Hand Trucking

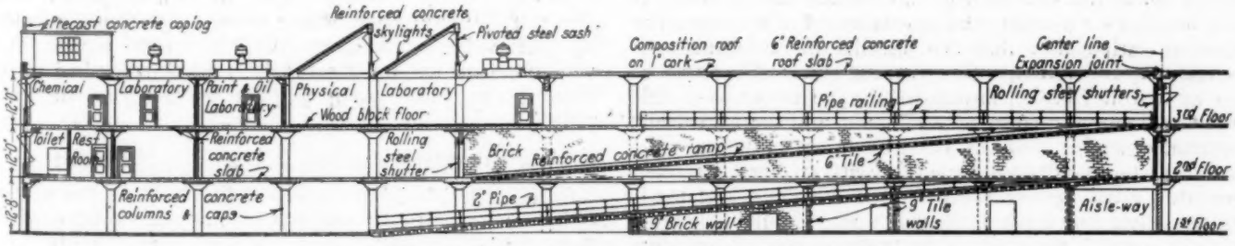
The second major activity is that of handling the material. Before building the storehouse, Aurora was the general supply depot for the lines east of the Missouri river, except for rails, fittings and bridge and building

lumber. It carried from $2,500,000 to $3,000,000 of stock on hand while its issues and transfers ranged from $1,500,000 to $1,700,000 each month. With the new storehouse it is expected to carry as much or more, consistent with the plan of absorbing some of the stock carried at outside points and making Aurora more nearly the general storehouse for the entire system, although as a result of the plan and of the economies of the new facility it is expected to reduce the stock for the entire system $500,000. Except for lumber, which will be kept in the existing lumber yard at Aurora, and for oil an oil house is to be provided, all this stock will be carried at the new store-



A Three-Ton Truck Ascending the Ramp

house, heavy castings and parts under the crane, light weather-resistant castings on the store platform and all other material inside the building, including torpedoes, fuses, etc., which will be stored in a vault under the ramp on the first floor. For the better control and handling of this stock the storehouse will be operated on the sectional plan, with a total of 15 section stockmen assigned over prescribed classifications of material. These stockmen will report to a sub-foreman in each floor and are charged



A Side Elevation Plan of the Forward Half of the Storehouse

not only with the routine of putting stock away, taking inventory and issuing stock, but with the responsibility of ordering it.

The plan further provides that, similarly to the present day freight-house operation, all material for the Aurora storehouse shall be received on the west platform where it is loaded directly on trailers and thence hauled to destination by tractors, which carry all outgoing shipments in the same manner to the east platform. This arrangement dispenses with hand trucking. While foremen in charge of loading will be sufficiently accustomed to the classification in which the material belongs so that separate trucks can be loaded with material going to separate sections without confusion, this operation will be facilitated by putting the section number on all requisitions so that invoices received from shippers will designate the proper section for the stock. The unit piling system will be followed in storing all material on shelves. Communication with foremen and with section stockmen is accomplished by an inter-departmental telephone system which makes it unnecessary to work through a switchboard operator in obtaining the parties wanted.

A Dispatcher for Truck Operation

The operation of the tractors and trucks within the store and elsewhere in the yards is the second phase of the store department work at Aurora which invites attention. Several years ago the Burlington inaugurated stores delivery at Aurora. As a matter of fact, Aurora is one of the first points where this system of delivering supplies to the shop forces was introduced. The system has grown until the stores department not only makes all deliveries of material from the stores to the shop, but is charged with all vehicular transportation in the terminal, including that between Aurora and the reclamation plant and yards at Eola, four miles east. For this purpose it operates two automobile trucks of 3 tons capacity each and 12 tractors, the latter including two assigned to the Eola reclamation plant. Largely for the more efficient service of these trucks, three miles of concrete roadway of 8, 10 and 16 ft. widths have been constructed in the terminal area as a part of the storehouse project. A combined garage and machine shop for the upkeep of this equipment has also been authorized and a plan inaugurated under which all truck and tractor movements will be controlled by a truck dispatcher in the general foreman's office.

The third phase of the stores department's work in connection with the new storehouse is the operation of a shop on the top floor of the building for the repair of all electrical and signaling apparatus. This work was formerly handled by the electrical and signaling departments, but it is expected that large economies will result from the centralization of this work under the jurisdiction of the stores department at a point where the bulk of this material is received. On the third floor of the building equipment has also been installed for the repair of air brake and steam hose, work which can be done more economically at the storehouse than at the reclamation plant, principally because old hose is not shipped with general scrap that moves to the scrap dock.

Plant Saves $100,000 a Year

It will be five or six months before the new plant at Aurora will be in complete operation, but the extensive studies preliminary to its construction and the observations made since its completion, place the estimated saving from its operations at approximately $100,000 a year. This includes a $60,000 reduction in the actual cost of handling the stock formerly carried at Aurora, saving re-

sulting from an estimated reduction of $500,000 in the stock over the system, and also savings in the insurance rate on the building's contents and in reduced freight charges through the ability to purchase material in larger lots. Additional savings are anticipated in the cost of the shop work described and also in the actual purchase of supplies by the ability to enter markets more favorably. Finally the plant promises savings to the using department resulting from the lessened hazard of supply shortages and to a certain extent in the better state of preservation of issued material assured by the more complete and perfect storage.

The project was designed and constructed under the direction of A. W. Newton, chief engineer, and W. T. Krausch, engineer of buildings, with the purchasing and store department, under the direction of J. G. Stuart, general storekeeper, and the mechanical department co-operating in the formulation of plans. It was built by the Wells Brothers Construction Company, Chicago. The total investment for the building, gantry crane, platforms, track adjustments and roadways is in the neighborhood of $525,000.

Diesel-Electric Tugboats for the New York Central

TWO Diesel-electric tugboats for operation in New York harbor have been ordered by the New York Central and will probably be put in operation this summer. Factors influencing this decision were economy, simplification and ease of control and other advantages attendant upon the use of electricity. The boats will be built by the Staten Island Shipbuilding Company at Staten Island and were designed by J. W. Millard & Brother, naval architects, New York. The complete electrical equipment will be supplied by the General Electric Company.

Each boat will be 108 ft. long with a maximum width of 26 ft. The Diesel engines and electric generators will be located amidships, while the propulsion motor will be installed aft and will be direct connected to the propeller shaft. The fuel oil storage tank will be located forward.

Power for driving the generators will be furnished by two Diesel engines on each boat, one set built by the Ingersoll-Rand Company and the other by the McIntosh & Seymour Corporation, Auburn, N. Y. Each engine will be a six-cylinder machine operating on a four-stroke cycle, rated 400 brake horsepower. The Ingersoll-Rand engine will run at a speed of 265 r.p.m. and the McIntosh & Seymour engine at 300 r.p.m. Each Diesel engine will be direct connected to a General Electric direct current generator rated 270 kilowatts and 240 volts. The propelling motor for each boat will be a 650-horsepower, 115/145 r.p.m., 480-volt direct current motor of the shunt wound, double armature type. This motor, when connected in series with the two main generators, will be capable of delivering 650 shaft horsepower to the propeller shaft at any speed from 115 to 145 r.p.m. In addition to the main generators, each boat will be equipped with two auxiliary generators, each rated 30 kilowatts, for furnishing power for excitation, lighting and for operating auxiliaries. These generators will be mounted on a shaft extension of the main generators.

One of the features of the boats will be a 75-horsepower fire pump on each, to be electrically driven, power being supplied by either of the main generators. Control of the boats will be from the pilot house and will be of the Ward-Leonard type.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended January 9, as in the previous week, fell below that of the corresponding week of 1925, largely because of the lighter coal loading. The total was 907,119 cars, as compared with 934,170 last year and 872,023 in 1924. Loading was less than that of the corresponding week of last year in all districts except the Pocahontas, and in all classes of commodities except coke, ore, merchandise and miscellaneous freight. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING

Week Ended January 9, 1926

Districts	1926	1925	1924
Eastern	203,815	212,541	210,838
Allegheny	181,257	183,553	177,255
Pocahontas	56,471	50,022	39,943
Southern	138,332	147,223	133,149
Northwestern	115,077	118,651	108,346
Central Western	145,231	152,270	141,802
Southwestern	66,936	69,470	60,690
Total Western	327,244	340,841	310,838
Commodities			
Grain and Grain Products	47,905	50,950	44,323
Livestock	37,209	39,909	39,735
Coal	193,294	217,631	211,053
Coke	17,701	13,614	11,783
Forest Products	59,042	69,285	63,524
Ore	10,970	10,616	7,614
Mdse., l. c. l.	239,465	232,851	219,978
Miscellaneous	301,533	299,314	274,013
Total	907,119	934,170	872,023
January 2	741,239	767,098	706,292
December 26	.....	701,079	647,324
December 19	.....	967,886	900,654
December 12	.....	1,008,824	957,424
Cumulative Total 2 Weeks	1,648,358	1,801,268	1,578,315

The freight car surplus for the first week of January was 310,155 cars, an increase of 42,416 cars as compared with the previous week. This included 115,502 coal cars and 147,033 box cars. The Canadian roads for the same week had a surplus of 21,512 cars, including 17,120 box cars and 400 coal cars.

Car Loading in Canada

Revenue car loadings at stations in Canada during the week ended January 9 totaled 54,559 cars, an increase over the previous of 11,000 cars. Loadings in all commodities showed improvement, grain showing a gain of 2,921 cars, merchandise 2,903 cars and coal 1,132 cars. Compared with the same week last year the increase was 4,581 cars, grain being heavier by 5,050 cars and merchandise by 907 cars, while coal loading showed a decrease of 1,475 cars.

	Total for Canada			Cumulative totals to date	
Commodities	Jan. 9, 1926	Jan. 2, 1926	Jan. 10, 1925	1926	1925
Grain and grain products	10,861	7,940	5,811	10,861	5,811
Live stock	2,477	1,405	3,133	2,477	3,133
Coal	6,163	5,031	7,638	6,163	7,638
Coke	514	387	317	514	317
Lumber	2,259	2,015	2,545	2,259	2,545
Pulp wood	3,076	2,350	3,065	3,076	3,065
Pulp and paper	2,571	2,168	2,032	2,571	2,032
Other forest products	2,400	1,806	2,246	2,400	2,246
Ore	1,326	1,308	1,070	1,326	1,070
Merchandise, L. C. L.	13,645	10,742	12,738	13,645	12,738
Miscellaneous	9,267	8,407	9,383	9,267	9,383
Total cars loaded	54,559	43,559	49,978	54,559	49,978
Total cars received from connections	29,569	26,543	29,953	29,569	29,953

AGRICULTURAL PRODUCTS shipped from the Ozark region of Missouri and Arkansas over the St. Louis-San Francisco during 1925 amounted to 16,736 carloads, representing a market value of $35,728,050 as compared with 13,697 cars representing $29,710,860 in 1924. Apples shipped totaled 4,400 cars, grapes 442, potatoes 798, strawberries 1,584, eggs 2,459, live and dressed poultry 1,789, butter 787, and watermelons and canteloupes 1,945.

Hearing on Railway Labor Bill

Executives and labor leaders say they have plan that will end strikes

WASHINGTON, D. C.

ASSERTING that they believed they had devised a a plan of adjusting railway labor disputes that will work, while protecting the public interest by putting an end to strikes, and that it will represent a new era of peace and understanding between the managements and the employees, spokesmen for the railways and their organized employees appeared at a hearing before the Senate committee on interstate commerce on January 14 and 15 and joined in asking that Congress pass the new railway labor bill without change.

Emphasizing the new spirit which had made possible a compromise agreement on a plan which both declared could be made to succeed, they took the position that for Congress to make any material change in the bill would relieve the parties to some extent from the obligation they have assumed, and that efforts to strengthen the bill by introducing the element of compulsion would tend to defeat its purpose.

After statements to this effect had been made by Alfred P. Thom, general counsel of the Association of Railway Executives, and Donald R. Richberg, general counsel for the organized railway employees, Gen. W. W. Atterbury, president of the Pennsylvania and chairman of the executives' committee that had negotiated the agreement with a committee of labor leaders, told the committee that he hoped they would appreciate that it represented "an epoch-making occasion" and that this was the first time he had ever appeared before a similar committee on any labor question when he was not in opposition to the employees.

Practically the only note of discord interjected into the harmony of the occasion was the statement by James A. Emery, general counsel of the National Association of Manufacturers, who declared that the bill as drafted does not adequately safeguard the public interest. He urged amendments giving the emergency fact-finding commission to be appointed by the President in case of a threatened strike at least the power to compel the appearance of witnesses and the production of books and papers, and also that power should be lodged somewhere to suspend and if necessary modify agreements reached by railroads and employees which might be considered prejudicial to the public interest. He said that if it be considered that the Railroad Labor Board has failed, the power might be placed in some other body, and he suggested a provision that copies of all agreements shall be filed with the Interstate Commerce Commission and that the commission on its own motion may be empowered to suspend them within ten days if it is of the opinion that the effect would necessitate a substantial readjustment of rates. He quoted statements made by railway executives and others before the same committee, when they were opposing the Howell-Barkley bill, to the effect that the public interest should be safeguarded from the possible results of uncontrolled agreements between the roads and their employees, often forced by the economic pressure of the labor organizations and threats of strikes. Mr. Emery suggested also that members of the Labor Board be called before the committee to speak for themselves, and after members of the committee expressed the opinion that they ought to be "heard before their throats are cut," Chairman Watson said that at least the chairman of the board would be heard.

Plan Approved by a Majority of Railway Executives

"We have reached this agreement," said Mr. Thom, in his opening statement, "in the spirit not of attempting to force the application of the last extreme of congressional power in respect to these matters, but of finding a way which will establish friendship instead of antagonism between the railroads and their employees; of committing us both to a system which we both say will accomplish the result of not disturbing transportation. It was a compromise. We come here with that agreement with the implication that both parties are committed to this as a means of preventing interruption of transportation."

Mr. Thom said that informal and unauthorized conferences were begun last January between certain executives of the carriers and certain labor leaders in an effort to see whether an agreement could be reached but that the Howell-Barkley bill was then under consideration and no agreement could be reached on any plan which differed materially from its provisions. After Congress had adjourned another effort was made and after extended negotiations the plan was submitted to a meeting of the Association of Railway Executives on December 21 and approved by 52 out of 72 executives present, although the vote on a mileage basis, one vote for each 1,000 miles, was 199 to 48. Therefore, he said, the plan has the overwhelming support of the carriers of the country. In giving a summary of the provisions of the bill Mr. Thom emphasized that there is nothing in the bill to interfere with any agreement between any carrier and its employees to settle disputes by any other machinery. When Senator Bruce said the bill seems to leave it entirely optional as to whether the parties shall submit a dispute to arbitration or accept the offices of the mediation board, Mr. Thom replied that the bill was not intended to make such things compulsory and that if a board of mediation should attempt to decide a controversy it would lose all value as a mediator. Referring to the emergency fact-finding body to be appointed by the President he said the bill leaves it to the President as to what he will do with the report but it is assumed he would make it public and that the commission is the body relied upon through which to make an appeal to public opinion.

When Senator Pittman asked if the failure of the Labor Board was in part due to the fact that it is a permanent body, Mr. Thom replied that, irrespective of his own opinion about the board, it is known that many of the labor organizations have refused to go before it, that a number of important carriers have refused to recognize its jurisdiction, and that Supreme Court has decided it has not power to enforce a decision. Regardless of the merits of the question, he said, there has been a breakdown. The President has twice invited the carriers and the employees to endeavor to agree on a substitute for the present law, the Senate committee had reportd a bill to abolish the board, 150 members of the House had signed a demand that the bill be taken from a committee.

"Public opinion no longer relies on the efficacy of the Labor Board, in my opinion," he said, "and Congress has indicated a desire to do away with it, so I have said to my clients that there is no longer any chance of relying on that method of settling disputes. We tried to find a method which both parties said would work to prevent the

interruption of transportation and establish friendship between them and we couldn't reach an agreement if we each insisted on what we wanted in the bill. Both sides knew that they could not have the support of public opinion if they brought about a strike but labor didn't want to write an anti-strike clause into the bill and the railway executives did not believe that the time had come when it was necessary to press down that crown of thorns upon labor's brow. They think that if this bill is enacted it will be the end of strikes and the beginning of an era of peace and understanding. It is true that there is no prohibition of strikes but it is the conclusion of experienced railway executives that it will prevent strikes and we ask you to give it a trial. If it fails it will be necessary to try something else, because the public must be protected in all events. In the opinion of the executives this will work and will prevent an interruption of transportation, while an anti-strike bill would promote antagonism."

Senator Bruce's Opinion

Senator Bruce said he did not think a direct curb on strikes necessary now because what labor has gained is due largely to the use of strikes and he did believe the right to strike ought to be impaired, but he thought there ought to be some sort of machinery provided to enable the public to step in when an aggravated situation arises and bring the force of public opinion to bear. Mr. Thom said it was the thought that the emergency commission would meet that situation. Mr. Thom added that there is nothing in the bill to prevent the use of injunction process to prevent a conspiracy but that there is nothing to prevent an individual from leaving his employment.

Senator Bruce again suggested that the board of mediation might be strengthened but when Mr. Thom said it would never be able to mediate again after having once attempted to decide a controversy against one of the parties the Senator said he believed that was right.

"If you change the bill in any important particular," said Mr. Thom, "you will relieve, to that extent, the parties of their obligation to make it work, because you will have proposed something new. Both sides say that compulsion is unnecessary. We do not ask that our employees be put in a straight-jacket, we are trusting in their good faith in this matter. We believe what we have brought in will work and we ask you to give it a trial. If it fails then the public will be free to adopt more stringent methods. We do not believe the time has come for that."

Asked what protection the public has against an agreement by the parties against the interest of the public Mr. Thom said that if the question referred to the matter of the cost, the Interstate Commerce Commission is still required to pass upon rates and would not be bound to increase rates to meet an increase in wages unless it thought it justified.

Mr. Thom said the railroad committee that had handled the negotiations included W. W. Atterbury, chairman; P. E. Crowley, president, New York Central; C. H. Markham, president, Illinois Central; Hale Holden, president, Chicago, Burlington & Quincy; J. H. Hustis, president, Boston & Maine; A. C. Needles, president, Norfolk & Western; W. L. Mapother, president, Louisville & Nashville; Charles Donnelly, president, Northern Pacific; L. W. Baldwin, president, Missouri Pacific; W. R. Scott, president, Southern Pacific, Texas and Louisiana Lines; E. E. Loomis, president, Lehigh Valley, and C. R. Gray, president, Union Pacific, and that Daniel Willard, president, Baltimore & Ohio, had acted with the committee, and that Elisha Lee, vice-president, Pennsylvania, and John G. Walber, vice-president, New York Central, had participated actively in the negotiations.

Purpose to Prevent Strikes and Preserve Self-Government

Mr. Richberg referred to the bill as "one of the most remarkable results of negotiative effort you have ever had before your committee, particularly when you realize the bitterness that has so often attended conferences between these parties," and said that the purpose is to prevent an interruption of transportation while attempting to preserve the principle of self-government in industry as much as possible. He said the public is not interested in the ordinary labor dispute but only in the great disputes in which a strike is threatened and that such situations are intended to be met by the provision for an emergency commission. After naming the 20 "standard, recognized railroad labor organizations" which support the bill and giving the names of the committee and sub-committee that represented labor in the negotiations, Mr. Richberg continued:

"I desire to express the hope that those who are sponsoring this legislation may be permitted to stand upon their convictions here expressed that it represents the most effective possible compromise of opposing views and that as the agreement of the parties, it represents legislation which can be most successfully put into operation.

"The strongest feature of the bill is the fact that it does represent the agreement of the parties and that all concerned will be placed under the moral obligation to see that the machinery which has been devised and accepted is utilized and operated in good faith and that it does promote harmony, efficiency and continuity in industrial relations in the transportation service.

"If Congress were seeking to impose upon discordant groups duties and obligations which Congress deemed necessary to protect the public interest, the desires of the parties might not be particularly influential in shaping the legislation. But, when the parties, whose unsettled disputes may bring hardships upon the public, have devised a program for the peaceful settlement of their disputes, is it not better that Congress should impose upon the parties the moral obligation to make their own agreement work, than that it should attempt to compel them to accept the theories and opinions of others regarding the best manner in which to adjust their controversies? In a word, what is sought in this legislation is that the sanction of public authority shall be given to the program devised by the railway managers and railway employees for adjusting their controversies in such a manner as to insure not only justice between the parties, but also the protection of the public interests which may be involved. Those who present this legislation to Congress are seeking not government prohibition and coercion to aid one interest in conflict with another, but are seeking government cooperation in the protection of all interests involved and at the same time preserving the principle of self-government in industry."

An Epoch-Making Occasion

General Atterbury, in a brief statement, spoke of the difference between American working men and those in Europe, saying that we have here a body of "energetic, self-opinionated men who are not hide-bound, but whose slogan is 'higher wages, better working conditions and increased productivity.'

"Today we come to you with an agreed-upon program," he said. "If we came to you with nothing but a line to say that we have come to tell you in good faith that we are going to try to work together to the good of the public, and could put that into a piece of legislation, it would have been satisfactory to me and it would have been a good accomplishment. To have brought so finished a piece of

legislation as we have been able to bring to you, wherein the public is so thoroughly protected, was far beyond any thought that I had in mind that I could help to accomplish, but at every stage I have been met with the hearty co-operation of the labor leaders, and I would hardly be fair to them if I did not at this time say that they have been perfectly splendid in their position and in their co-operation in the preparation of this bill. There are many things about the bill that I recognize are not satisfactory but I beg Mr. Emery of the National Association of Manufacturers and those that he represents, to take pause because he says one word to this committee that will interfere with the passage of this bill as it has been prepared; as it has been submitted by the employees and by the carriers."

Labor Leaders Predict Peace

D. B. Robertson, president, Brotherhood of Locomotive Firemen and Enginemen, who was chairman of the subcommittee representing labor in the negotiations, said in part:

"It has always been the desire of the organizations for which I speak, to have adjustment boards established by agreement if possible, in order to promote flexibility. Then these boards might be established either for a single carrier or a group of carriers, or nationally, as the circumstances might warrant and the parties desire. These organizations have been ready and are willing to carry their share of the expense of these boards. But when it was found impossible to establish such boards by agreement it seemed necessary to ask that they should be established by law, and as public boards, is was necessary to ask that they should be maintained by public funds. Now, however, we have a different situation.

"One of the more important results of the protracted negotiations which have preceded the introduction of this bill was the agreement reached by representatives of the carriers and employees that boards of adjustment shall be established. As these boards are a necessary part of the machinery for the peaceful settlement of certain disputes, this agreement has been written into the proposed law. The provision that boards of adjustment shall be established by agreement might have little force were it not for the fact that the agreement has been made that these boards will be established. At this point I venture to emphasize that those proponents of the bill now appearing before you are seeking the co-operation of the public and the sanction of public authority for carrying into effect their agreement, which is an agreement in the public interest.

"I speak with some hesitation upon the matter of an emergency board because those organizations for whom I speak have frequently and sincerely contended that a provision for any mechanism additional to the machinery of conference, adjustment, mediation and voluntary arbitration, might have an unfortunate tendency to impair the usefulness of that machinery. They have feared that if even the opportunity for a further government investigation were provided, this would tend to prevent stubborn negotiators from reaching an earlier agreement. I make this statement not in mitigation of our support of the bill as presented, which represents the agreement of the parties, but in order to make it clear that these organizations have not previously approved of a provision for an emergency board, not because of any unwillingness to permit public intervention where public interests are involved, nor because of any desire to subordinate public interest to private interest, but because we did not believe that such a provision would promote the public interest.

"In yielding this opinion as a concession to the opinion of others, we wish to express our hope that if this bill is enacted into law its primary provisions will be supported in such good faith that no need will arise for utilizing the emergency board provision. We trust, therefore, that its importance will not be exaggerated in the consideration of the bill.

"In concluding this presentation, I would like to lay emphasis on one point: The basic value of this proposed legislation lies in its reliance upon the force of contract and not of external compulsion. It is a machinery to promote peace, not a manual of war. Prohibitive commands, fearsome penalties, and threatening gestures would be entirely out of place and inconsistent with the spirit of the proposed act. It is a measure to promote industrial harmony based on collective bargaining and is itself a product of agreement. Neither party is seeking a law to hamper enemies or to favor friends. Both are seeking public ratification of and co-operation in our joint efforts to solve the problems of our industry so as to do justice to all private interests involved and to protect public interests."

W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, paid his respects to the representatives of the Association of Railway Executives for the manner in which they met the labor committee and said he was amazed at what has been accomplished in a period of two years when he had thought it might taken ten years to bring about such an agreement. He also expressed his "honest belief that any dispute that may arise can be settled under the provisions of the bill and that harmony and good will can be preserved." No compulsory plan has ever been successful, he said, but the moral obligation on the parties who framed this bill insures industrial peace while amply protecting the public interest. He also read a telegram from L. E. Sheppard, president of the Order of Railway Conductors, expressing hearty approval of the bill. Bert M. Jewell, representing the shop crafts, F. H. Flozdal, representing the maintenance of way employees, and W. S. Brown, president of the National Marine Engineers' Beneficial Association, also spoke on behalf of their respective groups of employees to give assurance of their intention to comply fully with the spirit of the agreement.

Amendments Urged to Protect Public

Mr. Emery, who appeared on January 15, said he regretted the necessity of striking a discordant note but that he was firmly convinced that the bill contains defects which should be corrected.

"The fundamental issue presented by the pending bill is whether or not it adequately protects the paramount public interest in uninterrupted transportation and retains efficient control over any agreements which may be made between carriers and their employees which would impose arbitrary or uneconomic burdens upon the users of transportation. We charge that the measure is defective in both particulars. The terms which are alleged to confer upon the President the power to appoint a committee to investigate an unadjusted dispute which threatens a paralysis of transportation are ambiguous and inadequate. The President's original jurisdiction depends for its exercise upon the prior discretion of a board of mediation. The commission which the President appoints does not possess the power to make an efficient inquiry. It cannot summon witnesses or require the production of documents under penalty, as can the private arbitration boards created by agreement between the parties themselves. The representatives of the public have less power to investigate in a crisis than the disputants by agreement between themselves.

"There is nothing in the bill to retain unchanged the condition which confronts the President's committee when it begins its investigation. No conduct by the parties in-

terrupting service during inquiry is made illegal or penalized. The subject matter of dispute is thus not protected until investigation can be had. The power of the courts to effectively protect the public interest in a great crisis is threatened by prohibitions which have no place in the measure and which may impair the remedies of individuals and the government on behalf of the public.

"Finally, the power possessed by the Labor Board to suspend any wage agreement made by the carriers and their employees, until its effect upon the cost of transportion could be determined, is destroyed. Yet the chairman of the railroad executives and their counsel a year ago declared emphatically before the committees of Congress that men and management should not be left to uncontrolled agreement imposing burdens upon transportation. They declared this control 'a great step forward,' and challenged Congress to dare abandon it. Yet they now propose to repeal it, and offer no substitute.

"The proponents of this measure, during the hearing, described it as a gentleman's agreement to adjust disputes and prevent the interruption of transportation. In their opinion, despite the above defects it provides adequate public protection. They plainly intimate that if it is changed in any particular they are under no moral obligation to execute it. If the proposal be regarded as a private contract, it requires no legislation, but since it proposes the repeal of existing safeguards, Congress, as the trustee of the public interest, must determine its adequacy or abdicate its authority and responsibility to a private agreement.

"The proposed emergency commission, to be appointed in case of a crisis," he said, "is not armed for its task, and experience has shown that the parties cannot be relied upon to maintain the status quo pending an investigation, because in 1914 when the President summoned the disputants to Washington to avert a strike, the strike was ordered before they went to Washington and in 1916 the strike order was issued in the midst of conferences with the President." When Senator Wheeler remarked that he understood that President Coolidge has approved the bill Mr. Emery replied that he did not so understand.

Both Mr. Thom and Mr. Richberg replied to Mr. Emery on January 16. Mr. Richberg ridiculed Mr. Emery as a representative of the public interest, saying that his representation was clearly that of a group of private interests which do not accept obligations of public service and that he was attempting to have unconstitutional provisions written into the bill apparently for the purpose of defeating its object. He also declared that railroads and railroad labor organizations have a far better record in labor controversies than industry and that interruptions of transportation have been almost negligible as compared with industrial controversies.

"Mr. Emery," he said, "advocates theories of compulsion that were written into law six centuries ago and which have been gradually written out of the law after centuries of failure. He asks Congress to abandon the intelligence of the twentieth century and return to the wisdom of the middle ages. He asks that the bill be amended to give the Interstate Commerce Commission power to annul wage agreements and arbitration awards. The Supreme Court of the United States has flatly held that such a power cannot be exercised by public authority under the constitution of the United States.

"He asks that the bill be amended to give a purely investigative board the power to compel testimony. The bill intends to create a body of public investigators who may either bring about a settlement of a controversy or place the responsibility for failure to settle upon the party in the wrong. Mr. Emery seeks to convert this useful body into another useless and mischief-making Labor Board to sit as a court, hear evidence and issue unenforceable opinions. The Supreme Court of the United States has held, in cases brought by Mr. Emery's associates against the Federal Trade Commission, that such an investigative body cannot be authorized to compel the production of evidence. Mr. Emery, therefore, seeks to impair the usefulness of the investigating board by granting it powers which it cannot lawfully exercise.

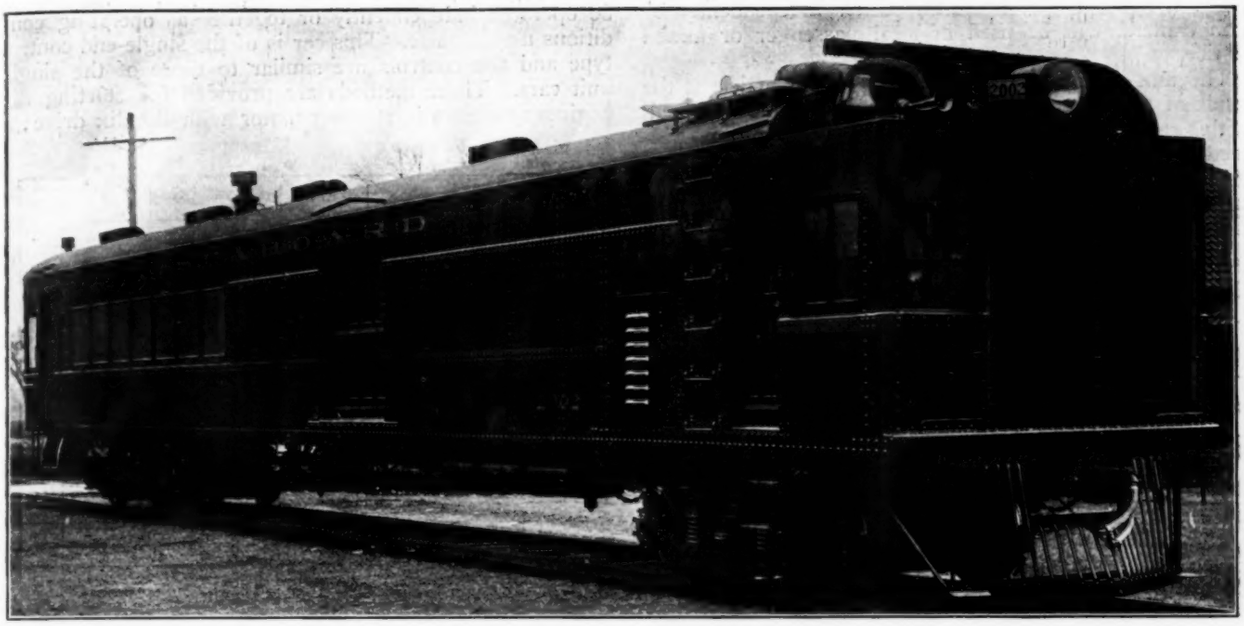
"The sponsors of this bill, the railways and their employees, have agreed and written into the bill a provision that during an investigation of a dispute conditions shall remain unchanged. Mr. Emery seeks in place of this ample protection of the public to have a vicious anti-strike provision written into the bill, well knowing that his proposition is an unnecessary and intolerable affront to the good faith of the employees.

"Mr. Emery also asks that the simple protection of the constitutional rights of an individual employee, which is now the law of the land and which is written into this bill in language almost identical with that of existing law, shall be amended so as to weaken the protection afforded."

Mr. Thom replied to Mr. Emery's references to statements made by him and by railway executives at the previous hearing and also to a question by Senator Couzens as to what had occurred to change their position. What had happened, he said, was that the committee had rejected his argument upon that occasion and that the repeal of the labor provisions of the transportation act was a foregone conclusion. "I have got to know a fact when I meet it in the road," he continued, "and when a treaty of peace was proposed I believed the time had arrived to lay aside the weapons of conflict. If the time shall come again when there is danger that the public will be crucified it will be time enough to get out the old weapons and for Congress to use its supreme power to protect the public interest. But I will put my reasons on broader grounds. The parties have now got together without lawyers and agreed that their policy hereafter shall be one of peace and adjustment of their difficulties. Neither of us was a party to the negotiations and the matter was referred to us only for the purpose of clarifying expressions and putting them into legal form. The policies are those of the railway executives and the labor leaders themselves. This marks a greater advance than we had ever made before and I appeal to you to let this plan work out and see where it will lead. And the party that shall ever be responsible for its failure cannot complain against the exercise of the power to prevent it being done again."

Charles L. Henry, representing the American Electric Railway Association, and P. J. Shea, for the Amalgamated Association of Street & Electric Railway Employees, asked that the word "steam" be inserted in the provision of the bill which exempts a "street, interurban, or suburban electric railway not operating as a part of a general railroad system of transportation," saying that the words "general steam railroad system" have been given a recognized legal meaning under the transportation act and that to leave out the word might cause confusion.

Bird M. Robinson, president of the American Short Line Railroad Association, pointed out that the short lines had not been invited and had not asked to participate in the negotiations which produced the bill, but that he understood that there is nothing in it to deprive such carriers and their employees from adjusting any differences in their own way, without being compelled to follow the procedure outlined in the bill, therefore they have no opposition to offer; but that if any amendments are proposed the effect of which would be to interfere with or restrict the right of this class of carriers and their employees to adjust their disputes between themselves, they would want to have the privilege of presenting their views.



High Capacity Dual Power Plant Gas-Electric Car Built for the Seaboard Air Line by the Electro-Motive Company

High Capacity Gas-Electric Car for the Seaboard

Dual power plant and four motors permit high-speed operation with greater hauling capacity

THE Electro-Motive Company, Cleveland, Ohio, has just completed the construction of a dual-power-plant gas-electric rail motor car which represents a distinct advance in the development of this type of car. In the general construction of the mechanical and electrical features this latest car is in reality a two-unit car, each unit of which is practically identical with the single units embodied in the 37 other cars built by this company during the past year. The details of these features were described in an article published in the *Railway Age* of August 30, 1924, page 371.

This new unit is the first of two being built at the plant of the St. Louis Car Company for the Seabord Air Line and it was designed to handle a class of traffic peculiar to the operating conditions at certain points on that road. The Seaboard Air Line has for many years operated several high-class through trains to accommodate Florida-bound passenger traffic during the winter season. Quite often conditions necessitate the stopping of these trains at other than the most important stations to pick up passengers or cars at intermediate points. In the selection of a rail motor car to relieve this condition it was desired to obtain a car of sufficient hauling capacity to handle one or two cars, such as chair or sleeping cars, or a greater number of lighter cars. The motor car is designed to handle cars and passengers from intermediate main-line or branch-line stations to main-line through-train stops. Such an operation in many cases may involve a motor car movement of only 50 or 60 car-miles, after

TABLE I—AVERAGE SPEEDS IN MILES AN HOUR, LEVEL TRACK

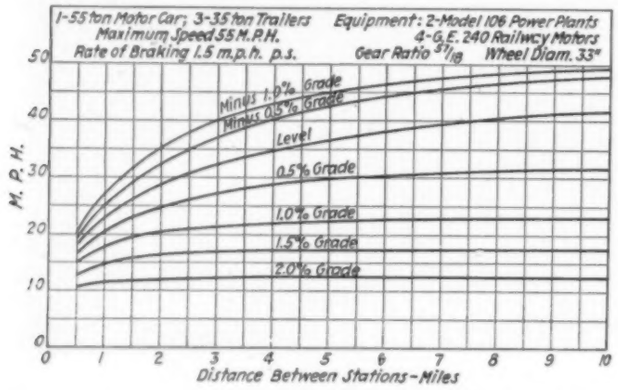
Make-up of train	Distance between stations—miles									
	1	2	3	4	5	6	7	8	9	10
Car alone	30.0	37.5	40.7	43.0	44.0	45.0	45.5	46.0	46.5	47.0
Car and one 22-ton trailer	28.3	35.2	39.3	42.3	44.5	46.0	47.0	48.0	48.5	49.0
Car and two 22-ton trailers	26.5	32.5	36.5	39.0	41.0	42.5	43.5	44.5	45.5	46.5
Car and one 35-ton trailer	27.0	33.5	37.5	40.0	42.0	44.0	45.0	46.0	46.5	47.5
Car and two 35-ton trailers	24.5	31.0	34.5	37.0	39.0	40.7	42.0	43.0	44.0	45.0
Car and three 35-ton trailers	23.0	29.0	32.5	35.0	36.5	38.0	39.5	40.5	41.2	42.0
Car and one 55-ton trailer	25.5	32.0	35.7	38.5	40.5	42.0	43.2	44.5	45.5	46.5
Car and two 55-ton trailers	23.0	28.5	32.0	34.5	36.5	38.0	39.5	40.5	41.5	42.5

TABLE II—AVERAGE SPEEDS IN MILES AN HOUR, GRADE 0.5 PER CENT COMPENSATED

Make-up of train	Distance between stations—miles									
	1	2	3	4	5	6	7	8	9	10
Car alone	28.0	35.0	39.0	41.0	43.0	44.0	45.0	45.5	46.0	46.5
Car and one 22-ton trailer	26.5	32.5	35.5	38.0	39.5	40.5	41.5	42.0	42.5	43.0
Car and two 22-ton trailers	24.5	29.5	32.5	34.5	35.5	36.5	37.0	37.7	38.0	38.3
Car and one 35-ton trailer	25.0	30.7	33.5	35.5	36.5	37.5	38.5	39.0	39.5	40.0
Car and two 35-ton trailers	22.5	26.5	29.5	31.5	33.0	33.5	34.0	34.5	35.0	35.5
Car and three 35-ton trailers	20.5	24.5	27.0	29.0	29.5	30.5	31.0	31.2	31.5	31.8
Car and one 55-ton trailer	23.5	29.0	31.5	33.5	34.5	35.5	36.0	36.8	37.2	37.5
Car and two 55-ton trailers	20.0	24.5	26.5	28.0	29.0	30.0	30.5	30.7	31.2	31.5

which the motor car, operating either independently or with trailers, will be used in local passenger or mixed service.

The unit described and illustrated in this article is the result of the demand for such a car and while designed, in this case, particularly for the operating conditions outlined above, it is also well adapted to high-speed operation on fast schedules between important centers where the nature of the traffic is such that the motor bus has been able to take away from the railroad a volume of traffic

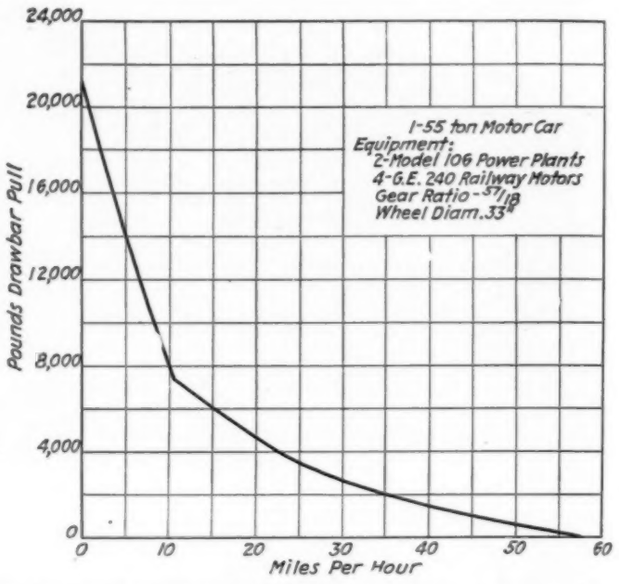


Average Speeds Which Can Be Maintained Under Various Grade Conditions with Various Distances Between Stops

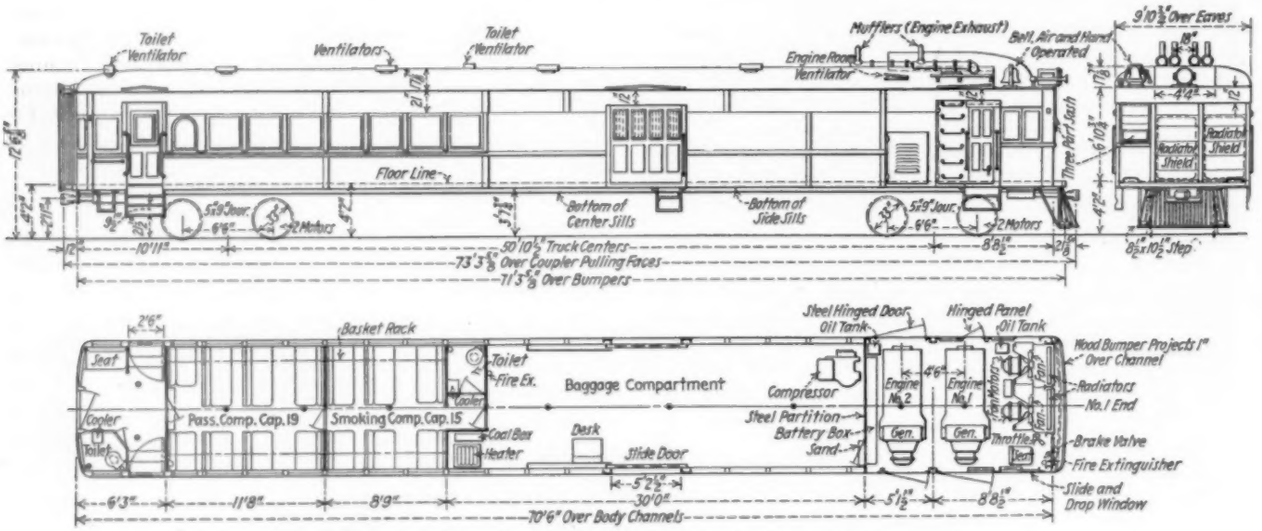
which the railroads have heretofore been obliged to handle at a loss or not handle at all. One of the cars will be placed in service between Portsmouth, Va., and Lewiston, N. C.; the other will be used between Atlanta, Ga., and Abbeyville, S. C.

Mechanical and Electrical Features

The power is generated by two six-cylinder 200-hp. Winton gasoline engines direct connected to General Electric 700-volt direct-current generators. Whereas, in the single unit car the driving motors are geared to the two axles of the forward truck only, this latter car is in effect two separate units, one generator set furnishing the current for two driving motors on the forward truck, while the second generator set furnishes the current for two identical motors on the rear truck. The two units may be operated independently or together as operating conditions may require. This car is of the single-end control type and the controls are similar to those of the single unit cars. Three methods are provided for starting the engines: an electric starting motor with Bendix drive; a compressed air starter, and hand cranking. The engines may be controlled separately or together by means of a locomotive type throttle. They are designed for normal operation at 1,000 r.p.m. at which speed the generators deliver approximately a constant power output under varying operating conditions. The electric controllers are arranged for the independent operation of the forward and rear truck driving motors. The air braking equipment is Westinghouse type AML with automatic features.



Draw-bar Pull Characteristic Curve of the Seaboard High Power Motor Car



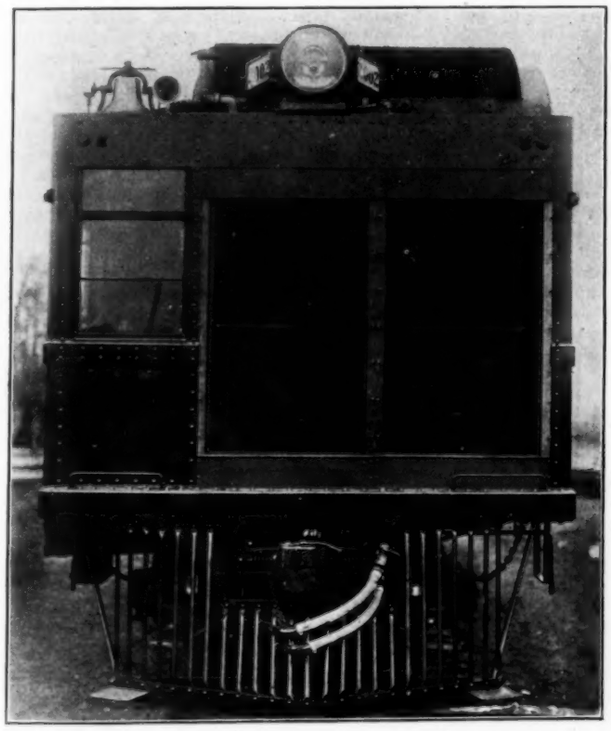
Floor Plan and Elevation of the Seaboard Air Line High Power Car

The total weight of the car is 110,000 lb. and the total length is 70 ft. 6 in. over bumper channels with a width over the eaves of 9 ft. 10¾ in. The car body is made up of four compartments: the engine, baggage and

passenger compartments, and the rear vestibule. The length of the engine compartment is 13 ft. 10 in.; of the baggage compartment, 30 ft. 0 in., and of the passenger compartment, 20 ft. 5 in. The baggage capacity is 20,000 lb., and the passenger compartment has a seating capacity of 34 persons. The extreme length of the car over couplers is 72 ft. 9 in.; the distance between truck centers, 51 ft. 9½ in., and the wheel centers of the trucks, 6 ft. 6 in. The wheels are rolled steel, 33 in. in diameter.

The car which has just been delivered is equipped with Hyatt roller bearings and will haul two standard railway cars, also roller bearing equipped. The other motor car and its trailers will be provided with standard A.R.A. journal boxes and brasses throughout. After these two trains have been in service for a certain period in which the power consumption on each will have been accurately measured by means of watt-hour meters, they will be interchanged, each having the former run and crew of the other, and the power consumption will again be measured. It is hoped in this way to eliminate all essential variables save the type of bearing, and, with due consideration of weather conditions, thus obtain an accurate measure of the performance of roller bearings as compared with standard railway journal bearings.

The new cars conform to American Railway Asso-



Front View Showing the Dual Radiator Arrangement

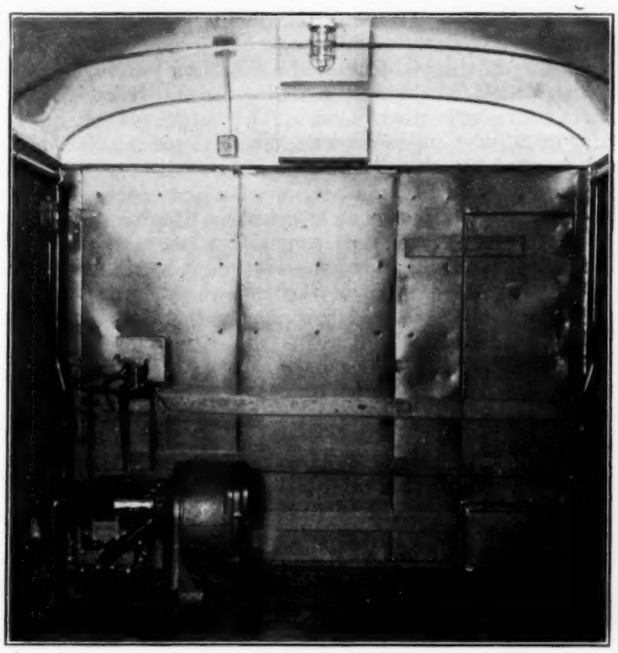
ciation standards and practice in car construction except that the sill sections are somewhat lighter. They also meet United States Postal Department regulations and may be used for the transportation of mail.

Operating Characteristics

Tables I and II give, as an example, the average speeds in miles per hour of this car operated independently and with trailers of different weights over runs of varying lengths on level track and on a compensated grade of 0.5 per cent. Fig. 1 shows a drawbar pull-speed curve, while in Fig. 2 are plotted curves of average speeds for a train of one motor car and three 35-ton trailers on different grades showing in chart form the data from which certain of the typical figures in Tables I and II were taken.

Single and Double Unit Cars Compared

A comparison of the operating characteristics of the single-unit and double-unit cars reveals the greatly increased hauling capacity at higher speeds. The acceleration, even under load, is rapid. A comparison of the acceleration of the single-unit and double-unit cars, operated without trailers, on a 0.5 per cent grade, shows that of the former to be 190 sec. from rest to 40 miles an



The Air Compressor Unit Is Located Above the Floor in the Front End of the Baggage Room—The Partition Is Divided and Hinged to Permit Access to the Power Plants for Maintenance

hour, and of the latter, 73 seconds for the same speed range.

Under favorable grade and curve conditions maximum speeds of 45 to 50 miles an hour are possible with this car handling the maximum number of trailers. Rapid acceleration and a braking deceleration of 1.5 miles per hour per second render high speed operation, even with frequent stops, possible.

Due to the difference in accounting methods on different roads, it is difficult to give an exact figure on the cost of operation per car-mile. A conservative estimate, however, places this at from 50 to 60 cents.

The first of the two cars for the Seaboard Air Line left St. Louis, Mo., January 14, being routed under its own power over the Big Four to Cincinnati, Ohio, and thence via the Chesapeake & Ohio to Richmond, Va., the point of delivery. A speed of 60 miles an hour was readily attained on the demonstration run to Cincinnati with a single 36-ton standard coach coupled behind as a trailer.

Forty railroad mechanical and operating officers rode part or all of the way on this demonstration run which was made without mishap on a regular passenger train schedule.

Are Transverse Fissures in Rails Due to High Wheel Loads?

Railway engineers take exception to W. P. Borland's conclusion—Believe manufacturing conditions a factor

NUMEROUS railway men have taken issue with the ideas expressed by W. P. Borland, director, Bureau of Safety, Interstate Commerce Commission, expressed in a letter published in the *Railway Age* of December 26, 1925, page 1181, commenting on an editorial on this subject in the issue of December 5, in which he placed the responsibility for transverse fissures in rails on high wheel loads. The consensus of opinion among railway engineers who have also given this subject much study is that manufacturing conditions also contribute to this relatively new and dangerous type of failure. The basis for these conclusions is given in letters which we have received, some of which are published below. Prominent among these letters is one from George J. Ray, chief engineer of the Delaware, Lackawanna & Western, and formerly chairman of the Rail committee of the American Railway Association. These letters follow:

Manufacturing Conditions Influence Transverse Fissures

HOBOKEN, N. J.

TO THE EDITOR:

I have noted with interest your editorial in the issue of December 5 entitled "Manchester and Victoria" in which you plead for a united and concentrated study of the cause of transverse fissures in steel rail. I have also noted with interest the letter from Mr. Borland, director of the Bureau of Safety of the Interstate Commerce Commission on the same subject, printed in your issue of December 26.

What you have stated in regard to the disposition on the part of the manufacturers to place the blame for the development of transverse fissures on heavy wheel loads and deficient maintenance and an equal tendency on the part of railway officers to place the blame on conditions and methods of manufacture would have more nearly represented the facts five or six years ago than today. It is my personal opinion that at the present time there is not much of a tendency on the part of the technical staff of the steel manufacturers to place all of the blame on the railroads nor do railroad officers, who are familiar with the problem, place all of the blame on the steel companies.

Furthermore, there has been for several years past a disposition on the part of the manufacturers and the officers of the railroads to try to determine the true cause of transverse fissures with possible methods for reducing the number or preventing them altogether.

For one I am quite willing to admit that wheel loads have much to do with the formation of transverse fissures, and after they are once formed, are entirely responsible for the development of these fissures. Certainly they would never develop without the wheel loads and the lighter the loads the longer it would take to develop the fissures.

Permit me to quote from my letter to the American Railway Engineering Association of March 10, 1921, at which time I was chairman of the Rail committee of that association:

"In the 1920 report of the Committee on Safety of Railroad Operation to the National Association of Railway and Utility Commissioners you will find the following statement concerning rails: 'The published annual statistics on rail failures signify that the margin in strength is in many cases exhausted by the conditions which now prevail in the track. It is obvious that increased durability and safety in rails must be attained in one or both of two ways, either the physical properties of the steel must be raised or the working stresses lowered.' I am not an advocate of heavy wheel loads, but it is obvious that we cannot, consistent with economic or satisfactory operation, reduce the present average of the freight car axle load. The old light cars are gradually being replaced with heavier ones so that the average wheel load is constantly on the increase. Since the flow of metal, either on the surface of the rail or at some distance below the surface, is primarily caused by the heavier car wheel loads it is evident that the wear of the rail will be faster and the flow greater, unless some improvement is made in the physical properties of the steel. The working stresses in the rail can be lowered by the use of heavier rail, but increasing the rail section will not reduce the tendency of the metal to abrade or flow under wheel loads. A few years ago the manufacturers were strongly contending that excessive breakage and poor results with rail were due to the failure on the part of the roads to use a sufficiently heavy rail to take care of the heavy wheel loads and other requirements. The quite general use of much heavier rail has not eliminated the difficulties. In fact, the heavier rail has in many cases proven to be fully as troublesome from a breakage standpoint as the lighter rail. In connection with this, it is interesting to note that since some of the roads have started to use a heavier section than 110 lb. per yard, the manufacturers now claim that these heavy sections cannot be rolled under as rigid a specification as the lighter sections. They are not willing to guarantee as good elongation for the heavy sections under the drop hammer.

"If all the rail rolled under the 1915 specifications had equally as good physical qualities as the best 50 per cent of the rail, there would be little cause for complaint and there would be little or no reason for a statement like that quoted above."

In Mr. Borland's letter he makes the following statement:

"No manufacturing condition is known to influence the formation of a transverse fissure."

I am willing to admit that we may not know positively of any specific manufacturing condition that influences the formation of transverse fissures, but we do know that transverse fissures are never developed in certain heats of steel and in some instances entire rollings are worn out in service without the development of transverse fissures. The assumption that the manufacturing conditions have nothing whatever to do with the formation of transverse fissures is not based on good judgment or full consideration of the data and facts which we have at hand. I have on many occasions furnished Mr. Howard, of Mr. Borland's department, with information to show definitely that certain heats of steel are subject to the development of transverse fissures while others rolled at the same time, laid in the same track and subject to the same wheel loads never develop transverse fissures. If the manufacturing conditions have nothing to do with the development of transverse fissures, what explanation have we for the above facts?

As an illustration, during the years 1911, 1912, 1913 and 1914 the Lackawanna railroad received 17,500 tons of 101 lb. rail from one mill, which we will designate

as Mill "A" and 32,000 tons of the same weight of rail from another mill, which we will designate as Mill "B." The rail was all laid in the main tracks and subjected to the same maintenance and traffic conditions. Some of the rail from Mill "A" is still in main line service. All of the rail from Mill "B" has been removed. The rail from Mill "A" developed 0.6 transverse fissure failures per thousand tons and gave very much better service from a wearing standpoint than the rail from Mill "B", in which 24.3 transverse fissures were developed per thousand tons of rail. Seventy-two heats had to be entirely removed from the track long before the rail was worn out, because of the excess number of transverse fissures developed in these particular heats. Most of the total transverse fissures in the rail from Mill "B" occurred in the 72 heats or in about one-eighth of the total number of heats. It certainly does not take a metallurgist or a physicist to convince a fair minded individual that the manufacturing conditions had something to do with the formation of transverse fissures in the rail from Mill "B". At the present time we still have in service on one of our heavy branch lines 80 lb. Bessemer rail rolled in 1893. This rail is today carrying heavy loads and the average speed of trains is about as high as elsewhere on the railroad. Because of the worn condition of the head the area of contact between the head of the rail and the wheel is very much less than with our 105 lb. and 130 lb. rail on the main line. Certainly the internal strain is greater with this rail than it is with the heavier section where the area of contact is greater. Still we have never had a transverse fissure failure with this rail.

I have been keeping a careful record of all rail rolled for the Lackawanna during the past 17 years. I have also carefully tabulated the failures, including transverse fissures, the first of which developed on our road in 1909. I think I have read all of the pamphlets which have been issued by the director of the Bureau of Safety of the Interstate Commerce Commission on the subject of transverse fissures and while the information submitted has been enlightening and worthy of careful consideration by all concerned, I am not convinced that I should throw away all of the evidence we possess and accept the theory that manufacturing conditions have nothing to do with the development of transverse fissures.

Admitting that the problem is one for the study of metallurgists and physicists, I agree that an earnest effort should be made on the part of all concerned to determine the cause of transverse fissures developing in certain heats of steel or certain rollings, whereas transverse fissures do not develop in other heats of the same rolling or in other rollings. If the physicists and metallurgists can help to solve this problem it will probably be possible to reduce very materially or possibly to eliminate the formation of transverse fissures.

G. J. RAY.
Chief Engineer, Delaware, Lackawanna & Western.

Cold Rolling Not the Cause of Transverse Fissures

FARGO, North Dakota.

TO THE EDITOR:

I have read with interest W. P. Borland's letter regarding the transverse fissure (*Railway Age,* December 26, 1925) wherein he definitely assigns the cause of such rail failures to the cold rolling of the running surface of the rail incident to heavy wheel pressures. In his opinion no feature of the manufacturing process enters into the cause of transverse fissures, and the steel maker is in no way responsible. Such an explanation is not convincing.

Although rails manufactured at the same mill and laid in contiguous track at the same time are all subjected to identically the same cold rolling process only an occasional rail develops a transverse fissure. It has also been definitely established that certain rail heats show a decided predisposition to failure from transverse fissure, such failures frequently occurring in sufficient numbers to necessitate condemning these entire heats and removing all of the rails from the track. Other rail heats are entirely free from this type of fracture. It is remarkable that such a dissimilarity in result is obtained if the cold rolling process is alone responsible for rail failures from transverse fissures.

Rails of the lighter weights 56, 66 or 72 lb., do not develop transverse fissures although such rails have in many cases been subjected to the cold rolling process for many years longer than the comparatively modern heavy rail. The transverse fissure is also peculiarly confined to rails manufactured by the open hearth process. I am familiar with a territory where many miles of open hearth rail are followed by a long stretch of Bessemer rail, all 90 lb., both types laid in the same year and both subjected to the same traffic and cold rolling process. The open hearth rail has developed a large number of tansverse fissure failures while the Bessemer rail is entirely free from this particular kind of fracture. Why should this condition obtain if the cold rolling of the rail with its over-straining loads is the sole cause of transverse fissures?

Among the rails that have failed on account of transverse fissures in the same stretch of track, some have only been in use a short time while others have undergone years of service before such failure finally occurred. Such a result would indicate an inherent difference in the quality of the rails. It would appear that some variation in the manufacture of open hearth rails of heavy section, perhaps very slight, causes a latent flaw or weakness in certain rails, and the cold rolling process to which the rails are subjected when in track develops this weakness to the point of failure.

C. H. BURGESS,
Road Master, Northern Pacific.

A Wide Field for Investigation

DALLAS, Tex.

TO THE EDITOR:

May I offer a contribution to the discussion of transverse fissures and their causes, with especial reference to Mr. Borland's letter in your issue of December 26? It seems to me unfortunate that the Bureau of Safety continues to insist that transverse fissures are due solely to the cold rolling effect of heavy wheel loads, and that there is no relief in sight with present grades of steel. It is entirely possible to bring about much improvement in this matter and I would like to point out some of the things that can be done.

As one concrete example, I will call your attention to a paper presented by P. H. Dudley at the June, 1919, meeting of the American Society for Testing Materials. Dr. Dudley found that eight railroad companies reported 322,593 tons of rails rolled from reheated blooms with only 59 transverse fissure failures, and 559,644 tons rolled direct with 1,054 failures. The rails rolled direct developed 900 per cent more transverse fissures than the rails from reheated blooms. There was one mill which reheated the blooms, concerning which he had yet to hear of a single transverse fissure in its large output, and another mill which had only one against its output.

Internal stresses in the head of the rail due to cold rolling undoubtedly are an important factor in the formation of transverse fissures; but I think this is only one of several contributing causes, any one of which alone

does not produce this type of failure. The principal causes are as follows:

1. Ingot defects, mostly segregation.

2. More or less faulty mill practice, causing incipient failures or high internal stresses in the head of the rail before it leaves the mill.

3. Imperfect counterbalancing of heavy freight locomotives. These engines, when operated at high speeds, produce stresses in the head of the rail in excess of the elastic limit of the steel.

4. The cold rolling effect of heavy wheel loads.

The cold rolling is a constant factor on any given piece of track. The other three causes are variable, which when present either singly or combined allow the transverse fissures to form. If this were not so, and the fissures were due to cold rolling alone, our track, after a certain length of time, would fail all at once and fly to pieces like the "one hoss shay." It follows from this, that to cure the trouble we should work on the variable factors, ingot defects, mill practice, and the design and use of rolling stock. The only way to change the constant factor, cold rolling, is to go back to lighter equipment and smaller train loads, at an enormous loss of operating efficiency.

As to the first cause, ingot defects, improvement can be made by increasing the silicon in the metal, thus reducing segregation; by making ample discard from the top of the ingot; by rigid tests of the A and B rails, with possible rejection of all of the former. These things are understood by students of the matter, the difficulty is to bring them into use.

For the second cause, faulty mill practice, better rail is possible by reheating the blooms before they go to the rail mill; by increasing the number of passes through the rail mill; by finishing the rail at or just above the critical temperature where ferrite begins to separate from the solid solution; by reducing gagging stresses; by adopting, after investigation, some form of heat treatment. The sorbitic treatment seems to have possibilities.

Coming to the third cause, locomotive counterbalancing, the thing to do is rigidly to enforce maximum speed restrictions of heavy freight locomotives, especially the types with 10 coupled drivers, which are apt to have the main driver underbalanced. At speeds of 40 miles per hour and higher these engines can produce dangerous stresses in the head of the rail, especially on curves. The counterbalancing of heavy passenger engines deserves careful study, because of the speeds involved. One of the very great advantages of the three cylinder locomotives is that it offers relief in this direction. The same thing is true of electric-driven locomotives.

Girder strength may have considerable importance in the matter. I note that Mr. Borland says that if this were true "the rail would fracture from the base instead of the interior of the head." As to this, I would call his attention to the second progress report of the Committee on Stresses in Railroad Track in the proceedings of the American Railway Engineering Association for 1920, pages 645-814, where the committee reports the finding of stresses of 52,000 lb. per sq. in. in the base of the rail and stresses 10 per cent higher in the head of the rail.

Certainly well informed people would not expect to find fully developed transverse fissures in unused rails, but the nucleus, the egg, as it were, from which the transverse fissure is ultimately hatched, has been and can be discovered before the rail is put into service. Dr. Dudley, in the paper above mentioned, described a method by which he had tested rails that had never been in the track, and which showed the sort of discontinuities that we would expect to develop into transverse fissures. This method could, if necessary, be used to test every rail before it was laid.

Moreover, the chemical composition of steel rail is still a fertile ground for research. The effect of varying proportions of carbon, of manganese, of silicon is by no means certain, especially in the presence of various impurities. How to get strength and hardness without loss of ductility; how to get ductility without the loss of the other qualities; these things are not settled. Neville and Cain, in the Bureau of Standards scientific paper No. 453, say, "Manganese had very little effect on the ductility of the alloys." Rawdon and Sillers, in scientific paper No. 464, say, "The results obtained strongly support previous recommendations which have been made by different metallurgists concerning the advantages to be gained from the use of higher manganese, particularly in low and medium carbon steels," and "The addition of manganese causes a shift on the eutectoid ratio toward the left of the diagram." If these things are true, and considering that greatest strength and finest structure, without loss of ductility, comes from working the steel just above the critical range, should we not increase our manganese and finish our rail at lower temperatures?

The foregoing, I think, shows the field for improvement in this matter to be a wide one. Solving the problem means the getting together of all parties involved, the operating man, the civil engineer, the mechanical engineer and the motive power man, the designer and maker of locomotives, the metallurgical expert and the rail manufacturer. The thing is too complex to be mastered by approach from one angle alone.

R. G. WAGGENER,
Assistant Engineer, Texas & Pacific.

Preliminary Report on Nickel Plate Train Control

WASHINGTON, D. C.

E. H. DE GROOT, JR., director of the Bureau of Signals and Train Control Devices of the Interstate Commerce Commission, has written to J. J. Bernet, president, of the New York, Chicago & St. Louis, regarding the preliminary inspection of the installation of the intermittent inductive automatic train stop device of the Union Switch & Signal Company on 20 miles of line between West Fort Wayne, Ind., and Arnolds, Ind. As a result of this inspection, the following criticism and comments are offered:

1. The closing of the inductor winding results in a clear operation of the device; hence a cross in the wires leading to this winding would result in a false clear condition of the inductor. It is, therefore, vital that the installation and maintenance of the track inductor circuit shall be such as to protect the integrity of this circuit.

2. The track element circuit should be maintained free from grounds and crosses in order to guard against false clear operations. In this installation one side of the inductor circuit is connected to the signal line common, and, therefore, more or less subject to grounds. It is suggested that a more satisfactory situation might be secured by maintaining this inductor circuit separately.

3. It is suggested that the type of protection employed to guard against an open switch, and also the type of fouling protection employed, be considered with a view of possibly securing increased protection.

4. Since certain possible crosses and grounds in the locomotive wiring could result in false clear operations, it is obvious that the integrity of these circuits must be protected adequately at all times.

5. Systematic performance record should be kept of the train stop device. In this should appear all failures, their character and cause.

When Double Tracking, the Second Track Was Built to a Lower Grade at the Right

Efficient Transportation Demands Modernization of Lines*

Reduction of ruling grades and maximum curvature essential to low operating costs

By C. A. Morse
Chief Engineer, Chicago, Rock Island & Pacific, Chicago

IN the early days of railroad construction, the objective in building a railroad was to so locate it that the cost of construction would be as small as possible. As the cost of grading was one of the largest items, the engineer sought a location that would require the least amount of grading. He used unlimited curvature and a heavy maximum grade to permit him to fit the contour of the country. About the time that the writer began railroad construction work in 1880, the construction engineers were beginning to criticize the locating engineers, dubbing some of them "profile locators" and "contour locators," but it was not until about 1890 that there was a general recognition of the fact that judgment could be exercised to advantage, in undertaking heavier work and thereby reducing distance and curvature.

A Measure of the Value of Low Grades and Flat Curves

A study made recently of the savings that would result from the reduction of the ruling grade from 1.40 per cent to 0.30 per cent on an engine district 104 miles long showed that in this particular case with a traffic of about 14,000 tons of freight each way per day, handled with 2-10-2 locomotives of 77,000 lb. tractive power in an average of nine freight trains each way per day, and with five passenger trains each way per day over the engine district, one could afford to spend $950,000 per 0.1 per cent reduction in ruling grade; and $220,000 per mile of distance eliminated by the relocation of the line. In other words, each 0.1 per cent reduction in ruling grade was equal to the shortening of the line 4.32 miles. This meant that as far as economy in the handling of freight over this engine district is concerned, the reduction of the ruling grade from 1.40 to 0.3 per cent would be equivalent to shortening the line 47.5 miles.

Comparatively little has been done in the reduction of grades and today a great majority of the trunk line railroads in this country are operating over grade lines that were considered economical 50 or 75 years ago. These railroads were built in the days before steam shovels and other mechanical grading devices had been developed, and when rock was handled with hand drills, black powder and carts. The result was that grading was very expensive and they sought to minimize it.

The trunk lines are to a great extent fixed in their locations today by the growth of cities and towns along their lines which makes their relocation to a great extent a question of policy. This is particularly true of the lines in the older settled portions of the country. However, it is worthy of study whether the time has not arrived when an investigation should be made of the possibility and desirability of either constructing new trunk lines, based on modern needs for low grades and light curvature, or revising the present lines where it is practicable to do so to get the same results.

Transportation today is recognized as a national necessity and it should be furnished at the minimum cost, and with the minimum loss of time. The attention that has

*Abstracted from a paper presented before the Western Society of Engineers, Chicago, on January 18.

been given to the time eliminated on the road during the past five years by the railroads of the country has developed the fact that by increasing the speed of transportation the merchants have found that they can reduce their stocks of goods very materially. This means a smaller investment on their part and a more rapid turnover of their capital.

This has attracted attention to the fact that time that elapses between the departure of the article from the factory or the farm and its arrival at its destination is practically dead time. Therefore, it represents an investment that is giving no return. By reducing the ruling grades and the degree of curvature of trunk line railroads, trains can be moved at a greater and equally safe speed and with less wear and tear on the equipment and track and, therefore, at less cost. The reduction in the ruling grade and in the rate of curvature will result in both cheaper transportation and a saving in time.

In the case of a single track trunk line, there is an opportunity of reducing the ruling grade in connection with the construction of second track. During the last 25 years, it has been the practice of most railroads to reduce their grades in connection with the construction of a second track, but unfortunately additional main tracks had been constructed on many of the older roads before the value of the lighter ruling grade was appreciated. The reduction of grade means practically the rebuilding of such lines and the expense of this together with the interruption to traffic while it is being done has prevented much of this from being carried out for unless the subject is thoroughly investigated, we are apt to consider it as impracticable.

Roadbed Carries No Depreciation Charges

We find railroads spending large sums of money for improvements in superstructures that will facilitate the handling of traffic and effect a saving in time. Little thought has been given to the fact that the expenditures for grading in connection with a reduction in the ruling grade have to be made but once; therefore, they involve only a carrying charge of interest on the investment, while improvements in the superstructures carry not only the interest on the investment but depreciation and maintenance as well. The roadbed, once established and solidified, has practically no depreciation or maintenance. Whatever there is of either is no greater than on the original roadbed before the grade line was reduced. It is fair to say that the depreciation and maintenance of items of superstructure are each equal to the interest charge on the investment; therefore, the annual charge on these items is three times what it is on the same amount of money invested in grading.

As a result it can safely be said regarding any figures on grade revision, that the grading portion of it will add only one-third as much to the annual operating expense as any other item of improvement. Right of way and grading are the only two items in the construction of a railroad that do not depreciate or carry a maintenance charge.

We are apt to look with much favor on revision of alinement that will reduce distance, as distance has been the "bugaboo" of operating officers since railroads came into existence. We constantly hear comparisons made between railroads to the effect that one is the long line or the other is the short line, but seldom do we find an operating officer who has taken the trouble to look into the comparative rates of ruling grade or the comparative amounts of sharp curvature on any two lines that he is comparing. Yet from the standpoint of economical operation they are just as important while the ruling grade is more important than the question of distance.

Recent Construction Indicates Value of Low Grades

That this is beginning to be appreciated is shown in some of the more recent construction work, such as the Castleton cutoff on the New York Central, which has been constructed with a 0.35 per cent ruling grade; the new line on the Illinois Central in Illinois which has a ruling grade of 0.3 per cent and a maximum of one degree curves; the change of line on the Chicago, Burlington and Quincy in Southern Illinois which has been constructed with a 0.30 per cent ruling grade and with only 0.25 per cent ruling grade on the long grades; and a new line on the Santa Fe in Kansas which has been constructed with a 0.40 per cent ruling grade. This last mentioned line is an illustration of how the idea of ruling grade line has developed in the past 40 years. This line was originally located and a part of it constructed in 1886. I was a division engineer on a part of the construction of this line and it was located and the portion that was built at that time was constructed with a one per cent ruling grade. About two years ago the line was relocated on a 0.40 ruling grade. In confirmation of my estimate that one could afford to spend $950,000 per 0.1 per cent reduction in ruling grade, it is interesting to note that in conversation with the general manager of the portion of the Santa Fe on which this 0.40 per cent line was built, he stated to me without knowing anything about my figures, that they estimated that they could afford to spend $1,000,000 for each 0.1 per cent reduction in ruling grade.

The fact that the railroads mentioned above have constructed new trunk lines with ruling grades of from 0.25 to 0.40 per cent shows that the value of a low grade line is recognized, as the cost of construction of these lines on the low grade lines was, as far as the grading is concerned, far in excess of what it would have been on the ruling grades that they are still operating on lines built 40 or more years ago.

If a railroad is warranted in spending in the neighborhood of $1,000,000 per 0.1 per cent reduction of ruling grade on an engine district that is handling from 14,000 to 15,000 tons of freight per day each way, it would be warranted in spending twice this amount on an engine district that was handling twice this amount of business, or 1½ times this amount on a railroad that is handling 50 per cent more business. This means that on a 100-mile engine district with a ruling grade of 1 per cent at the present time, one would be warranted in spending $6,000,000 in order to reduce this grade to 0.40 per cent on a line that is handling 15,000 tons of freight each way per day; $8,000,000 on a line that is handling 20,000 tons each way per day; $10,000,000 on a line that is handling 25,000 tons each way per day and $12,000,000 on a line handling 30,000 tons each way per day. In other words, on a 100-mile engine district one would be warranted in spending from $60,000 to $120,000 per mile to reduce the ruling grade from 1.00 to 0.4 per cent. Probably 60 per cent or 70 per cent of the cost would be for grading which, after it had become solidified, would only carry an interest charge, and the balance of the expense, outside of the bridging, would be on a class of work that would carry only an interest charge such as the temporary shifting, lifting and lowering of tracks in connection with the grading done under operation.

In making a study of the amount that one would be warranted in spending on any particular engine district for second track or the reduction of the ruling grade or curvature, an estimate should be based on the past increase in business to determine how much of an increase in business may be expected within the next 10 to 25 years. One is certainly warranted in spending money for improvements of this kind in the light of an anticipated

increase in business during at least 10 years. In the territory west of Chicago this would mean an increase of about one-third in business, as the average rate of increase for the past 10 to 20 years has been in the neighborhood of 3 per cent. There are places, however, where the increase in a particular line in question has been 100 per cent in 10 years. Each individual case must of course be studied by itself. In determining what we are warranted in spending, one should in all cases look ahead at least 10 to 25 years.

Unfortunately under the accounting rules at present in force, the shifting, lowering and raising of tracks and their maintenance in order to take care of operation and the cost of reballasting on the new grade line are chargeable to operation. This heavy increase in operating expenses often tends to prevent work of this kind being undertaken. It would aid greatly if a change could be made in the accounting rules by which this expense would not be charged to current operation but to a separate account with the idea of later, when the earnings become sufficient through the reduction in operating expenses incidental to such improvements, charging them out gradually over a term of years, or carrying them in suspense until such time as they earn enough more than a fair return on the value of their property to be subject to the recapture clause in the Transportation Act, with the idea that when they reached that point the amount of their earnings subject to recapture should first be applied on this amount carried in suspense.

It is of great importance to the railroads and to the nation, that the annual net earnings of the railroads shall be sufficient to pay a fair dividend on the common stock in order to keep their credit up to the point where they can borrow money or sell stocks to obtain money for the extensions and improvements that are constantly required to take care of the increase in business, and to replace obsolete machinery and devices with modern and up to date equipment.

Heavy Motive Power Without Low Grades an Expensive Expedient

One of the results of the lack of credit has been the installation of heavier motive power as a means of reducing operating expenses before reducing the grades. The use of heavy power is in the interest of economy and efficiency, but wherever it is possible to do so, the grade line and the curves should be reduced before heavy power is installed. Putting on heavy power is attractive, as it seems at first glance to bring results with a comparatively small outlay, but in the end it is an expensive expedient if installed before grades are reduced where grade reduction is practicable; if there is any possibility of a road being able to get the money necessary, within the next five or ten years, to reduce the grade.

The installation of heavy power requires that the roadbed be widened, additional ballast and ties added, heavier rail provided, stronger bridges, longer turntables, longer stalls and pits installed in roundhouses and larger locomotive machine shops and boiler shops constructed. Furthermore in many cases by the time these temporary changes are completed a large portion of this expense may be thrown away when eventually the grades are reduced and longer engine districts established. In the meantime, one will be confronted with the fact that he must compete with a railroad that has a lower ruling grade and lighter curves which means that they can haul heavier trains at higher speeds than you can. They may also be able to do so without using as heavy power as you are using, and if so, they have, as a reserve, the possibility of installing heavy power when needed in the future.

Heavy power can be used to advantage on portions of a railroad where there is little prospect of reducing the ruling grade, or where it is impracticable. It is in such locations that it should be installed first.

In connection with the possible construction of a second track, every railroad, with single track main lines, should make careful surveys for grade improvements before building the second track, the grade line and alinement should be corrected as a part of the second track construction, developing additional distance on the up grade track if practical and reducing the degree of curvature wherever it is possible to do so without prohibitive expense.

Effect of Curvature on Maintenance Costs

The maintenance cost for both track and equipment increases very materially with the degree of curvature. A study made on an engine district with 100 lb. rail on which Mikado locomotives with 57,000 lb. tractive power were employed, developed the fact that on a four degree curve, which was the maximum degree of curvature on that engine district, both rails on the curve had to be renewed twice during the life of the rail on tangent of approximately 10 years. On a three degree curve both rails had to be renewed once and one rail a second time during that period. On two degree curves both rails had to be renewed once and on one degree curves neither rail had to be renewed during the 10-year period.

In addition, the regaging due to wear on the outside rail weakened the ties to quite an extent and the track on the four degree curve had to be surfaced more often than on the lighter curves. Three degree and four degree curves required two to three surfacings per year while only one surfacing was needed on the one degree curves. The wear on the locomotive driving tires is in practically the same proportion as on the outer rails on the curves.

A railroad is a manufacturer of a product termed transportation. Other manufacturers learned years ago that if they expected to compete with new factories equipped with new and up to date machinery, they must discard their old machinery and provide themselves with that with which they can perform the work most efficiently and cheaply. For some reason the railroads have largely devoted their attention to locomotives, apparently overlooking the fact that the locomotive is only one unit of the factory. There are two important parts of the railroad machine. One is the roadway over which all the transportation must pass. The other is the power that moves it over the roadway. They should bear a certain relation to each other, if we are to get the most economical operating results. Neither can perform its work alone, one is as necessary as the other, and each should be kept improved to conform to the increased knowledge as to what makes for efficiency and economy.

Need for Modernizing Lines

Simply maintaining in first class condition a roadway that, as far as grades and alinement are concerned, is of a type such as was constructed a half century ago, is not maintaining a modern railroad, even though the locomotives and rolling stock are strictly up to date. Due to good riding track, it may not affect the patron of the passenger service, but it does affect the patron of the freight service who has to pay the freight rates, and it affects the stockholder. Any manufacturer who continues to turn out an article at a loss is on the road to bankruptcy. So it must be with the railroad that does not take measures to modernize not only its locomotives, terminals and signaling but the grades and alinement of its roadway as well.

Anyone can build a second track if he simply parallels the first main track and conforms to the grade of that

track, but the engineer who is familiar with the economies of transportation does not today build second track in that manner. He reduces the ruling grade and the rate of curvature to the greatest extent possible, in order to provide a stretch of track that can be operated as cheaply as possible.

We see statements made to the effect that by electrifying a single track railroad, or by signaling a single track railroad, its capacity can be increased, and the construction of second track deferred. Such statements are in line with the practice of putting heavy power on a single track railroad where there is a possibility of reducing the grade.

The thing to do when any single track railroad has reached the point where its traffic is heavy enough to cause material delays in getting trains over the line is to construct a second track (bearing in mind that a single track railroad is but half a railroad), and in doing so reducing the grades and curvature to the minimum; then when the double track line approaches congestion, is the time to add the special signaling, electrification or other refinements by which one can keep traffic moving.

Time is the element that must be considered in these days, and whatever will save time will reduce the cost of operation. Two trains cannot pass on a single track; therefore, one of them must stop, and go in on a siding. This means that unless the switches are interlocked, so that they can be thrown by a towerman or operator, not only one stop but *two* additional stops to throw the switches, or *three stops* are made every time a train takes a siding. It also means that nine out of every ten trains have to wait on the siding for the superior train to pass. This is *more time lost* and the more dense the traffic, the more time is spent on sidetracks consuming fuel and wasting time.

A Demonstration of the Value of Double Track

Some interesting data have been compiled on the Kansas division of the Rock Island that illustrate the saving in time that results from a double track, as compared with a single track. About 1916, there was double track for the first 65 miles of this division west from Kansas City, and single track on the next 82 miles, the two comprising what is now operated as one engine district (it had at that time to be split into two engine districts on account of the large amount of overtime created). The 32 miles west of the west end of the double track section had the same ruling grade as the 65 miles. A comparison of the speed made by freight trains over the 65 miles of double track, and over this 32 miles of single track showed that they were making 16.2 miles per hour over the double track and 7.5 miles per hour over the single track. In 1918 six miles of second track was constructed at the east end and six miles at the west end of this 32-mile section, thus making 12 miles of double track and leaving 20 miles of single track. A check of the speed per hour was again made in 1920 and at that time freight trains on the 65 miles of double track were making an average speed of 16.3 miles per hour and on the 32 miles (12 miles of which was now double track), 11.0 miles per hour.

In 1923 a second track was constructed on the remaining 20 miles and a check in 1924 of the speed of freight trains over this 32 miles showed an average speed of 20 miles per hour. The 65 miles of double track was used by both the Union Pacific and the Rock Island and there were about 50 per cent more train movements over it than over the 32-mile stretch, which handled only the Rock Island traffic. The traffic over this 32 miles averaged 14,750 tons westbound and 16,870 tons eastbound, daily, in 1924, with seven passenger trains each way daily, with the eastbound business much in excess of the average for two or three months of the year.

In connection with the construction of second track, reduction in grade should be made wherever possible, even though the ruling grade of the engine district is not reduced. This has not been done to any great extent in the past, as many engineers and operating officers have felt that if the ruling grade for the entire engine district could not be reduced, they were not warranted in spending money, or paying any attention to isolated sections of heavy grade. It was the common practice in early construction to use the maximum grade, and the maximum degree of curvature wherever it would save a little grading, the idea at that time being that if you had one piece of maximum grade or one sharp curve on the line, it would be all right to use the same at any other point where the cost of construction would be reduced. This is a mistake for when you keep in mind that time on the road is what runs up the expense, and that time saved is money saved, it will be seen that a reduction of the maximum grade in isolated stretches, so as to avoid the slowing up of the trains while passing over them, will effect a saving in the time it takes a train to get over the district. While this does not permit of increasing the tons handled per train, yet this saving in time has a money value. The same applies to sharp curvature. At the time of Wellington's publication, it was not recognized that sharp curvature affected the cost of maintenance of both track and equipment, but today we know that it has a very marked effect, and that the lightest degree of curve that is practicable should be used.

Time An Important Factor

Any study of railroad economics today must put the matter of "Time Saved" on the front page. The way to save time is to keep trains moving. It is not so much a question of how fast they are moving as it is to keep them moving all the time. There will be times when they must stop, but they should not be obliged to make any unnecessary stops and the necessary stops should be reduced to a minimum.

One means of accomplishing this is to have all passing track and crossover switches interlocked, and thrown by an operator at the station or at an interlocking plant, and not require the train to stop to permit trainmen to throw the switches. The remote control switch machine has solved this problem and saves its costs on a heavy traffic division in a year's time. On double track, switches can be interlocked at the entering end and a spring switch installed on the leaving end.

For the past 10 or 15 years there have been periodical suggestions to the effect that railroads should construct a so-called permanent roadbed of reinforced concrete with the idea of reducing maintenance. The subject has been revived lately and comparisons made with the hard surfaced public roads that are being constructed for automobiles and automobile truck use. However, a careful study of the railroads of the country will show that not to exceed 25 per cent of the trunk line mileage is on a low enough grade, or has light enough curvature to be considered as permanently located. What is needed is the improvements that will reduce transportation expense first; then will be the time to consider the expense of maintenance of way. Transportation expenses are about two and one-half times as much as the cost of maintenance of way and, therefore, a much smaller percentage of saving in transportation will give a much greater saving in operating expenses. If we can educate the railroad people, and the general public, to the necessity of modernizing the permanent way of the railroads, as to ruling grades and degrees of curvature, it will not be much of a

job to carry the idea still further to greater permanence of the roadbed. But with the great majority of the railroads operating over lines that have the grade line and curvature of a half century ago, the big job is to modernize the roadway.

Conclusions

There are few railroads with 10,000 miles of main line that can not spend $100,000,000 (over and above what they are now able to secure) in the next ten years on improvements that will earn an average of 12½ per cent on the investment; which means, after paying interest on the cost, an increase in their net earnings of $8,000,000 per year. If means could be devised by which the federal government could furnish money to the railroads of the country at 4 per cent or 4½ per cent interest, to be used for those improvements that reduce operating expenses, they would within another 10 years be on an earning basis that would permit a reduction in freight rates and still give a fair return on the value of the property, and their credit would be established so that they could raise the money by bond issues with which to repay the government.

It is a case of doing one of three things:

First: Increase the present rates to earn a fair return on the value of the property used in providing railroad transportation, in order to provide credit on which money can be secured for improvements, or

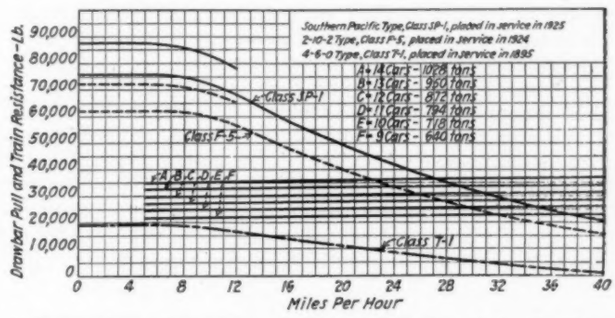
Second: If for political or other reasons the rates cannot be increased to furnish sufficient income to give the railroads credit on which to borrow money for improvements, the federal government, as this is a national question, should arrange to loan the railroads money for improvements for this purpose, or

Third: Continue to hold down rates and to reduce them every time the crops are poor, continue to order the railroads to elevate tracks through cities, to construct monumental union stations, separate grades with public roads and install such devices as automatic train control, none of which give any appreciable return on the investment, and bankrupt the railroads as a whole, and bring about government ownership and operation. Which means an increase in freight rates, or an increase in federal taxes to make up the deficit that would be incurred. If either the first or the second alternative can be brought about, there will be an opportunity within a few years to get lower freight rates. If the third policy is continued, there is little chance for added economy or efficiency in handling the transportation of the country, and no possibility of lower transportation costs in the future.

Three Cylinder Locomotives on the Southern Pacific

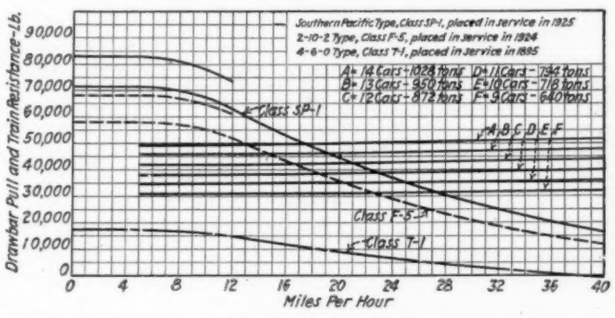
OF a total of 16 three-cylinder 4-10-2 type locomotives purchased by the Southern Pacific in 1925, six are in service on the Sierra Nevada mountains between Roseville, Cal., and Sparks, Nev., and 10 on the Siskiyou mountains between Dunsmuir, Cal., and Ashland, Ore.

On the line between Roseville and Sparks, maximum grades of 2.6 per cent occur going east, and 2.3 per cent going west. The consist of the through passenger trains over this district is from 10 to 13 cars, with a tonnage varying from 600 to 950 tons. Previously, when trains were of 11 cars or less, they were handled by single heavy 2-10-2 type locomotives, having a tractive effort of 75,150 lb. When more than 11 cars were handled it was necessary to give the 2-10-2 type locomotive a 2-8-2 type helper, or use two 2-8-2 type locomotives, the tractive effort of the latter ebing 51,000 lb. each. The timecard calls for schedules for the San Francisco-Overland Limited


Southern Pacific Type, Class SP-1, placed in service in 1925
2-10-2 Type, Class P-5, placed in service in 1924
4-6-0 Type, Class T-1, placed in service in 1895
A+14 Cars = 1078 tons
B+13 Cars = 950 tons
C+12 Cars = 872 tons
D+11 Cars = 794 tons
E+10 Cars = 718 tons
F+9 Cars = 640 tons
Class SP-1
Class P-5
A B C D E F
Class T-1
Drawbar Pull and Train Resistance-Lb.
Miles Per Hour

A Comparison of the Draw-bar Pull Capacity of the Southern Pacific 4-10-2 Type Locomotives, with a Recent 2-10-2 Type and with the Passenger Power of Thirty Years Ago—Grade 1.5 Per Cent

trains going east as follows: From Roseville to Colfax, with a maximum grade of 1.5 per cent, 26.3 miles an hour; and from Colfax to Summit, with a maximum grade of 2.6


Southern Pacific Type, Class SP-1, placed in service in 1925
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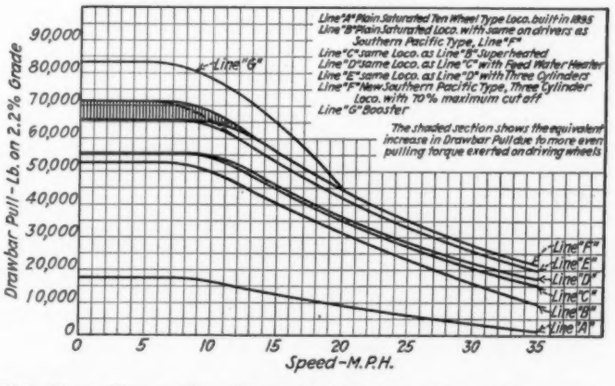
Class SP-1
A B C D E F
Class P-5
Class T-1
Drawbar Pull and Train Resistance-Lb.
Miles Per Hour

How the Draw-bar Pull of the New 4-10-2 Locomotives Compares with the Recent 2-10-2 Type and the Passenger Power of Thirty Years Ago on a 2.2 Per Cent Grade

per cent, 18.7 miles an hour. While the new three-cylinder 4-10-2 type locomotives were designed to handle a maximum of 12 cars on the San Francisco-Overland


Line "A" Plain Saturated Ten Wheel Type Loco. built in 1895
Line "B" Plain Saturated Loco. with same drivers as Southern Pacific Type, Line "F"
Line "C" same Loco. as Line "B" Superheated
Line "D" same Loco. as Line "C" with Feed Water Heater
Line "E" same Loco. as Line "D" with Three Cylinders
Line "F" New Southern Pacific Type, Three Cylinder Loco. with 70% maximum cut off
Line "G" Booster
The shaded section shows the equivalent increase in Drawbar Pull due to more even pulling torque exerted on driving wheels
Line "G"
Line "F"
Line "E"
Line "D"
Line "C"
Line "B"
Line "A"
Drawbar Pull - Lb. on 2.2% Grade
Speed - M.P.H.

This Chart Shows How Much of the Thirty Years' Increase in Draw-bar Pull Capacity Has Come from Weight of Basic Design, and How Much Is Due to the Use of Capacity Increasing Factors—Grade 2.2 Per Cent

Limited without help, they have successfully handled 17 cars, weighing 950 tons on this train, and 14 cars on other trains having slower schedules. The expense of using

helpers on fast trains over this territory is therefore eliminated.

To date on the Shasta route, on account of heavy freight business, these locomotives have been used almost exclusively in freight service, with equally satisfactory results. Between Gerber and Dunsmuir, where helpers are not required, the average monthly performance shows that they have handled over 16 per cent more tonnage than the 2-10-2 type and at a fuel saving of 12 per cent.

A comparison of the 4-10-2 type three-cylinder locomotive performance with that of the 2-10-2 type placed in service in 1924 and the 4-6-0 type placed in service in 1895 is afforded by the accompanying charts. The Southern Pacific three-cylinder locomotive was described on page 269 of the August 8, 1925, *Railway Age*.

B. & O. May Buy Cincinnati, Indianapolis & Western

THE Baltimore & Ohio has made an offer for the purchase of the stock of the Cincinnati, Indianapolis & Western, and will acquire that property provided substantially all of the stock can be secured. Details of the offer, report of the making of which has been confirmed by George M. Shriver, senior vice-president of the Baltimore & Ohio, are covered in a circular which has been transmitted by the directors of the Cincinnati, Indianapolis & Western to the shareholders, and which states that more than a majority of the shareholders of the Cincinnati, Indianapolis & Western have agreed to accept the B. & O.'s offer.

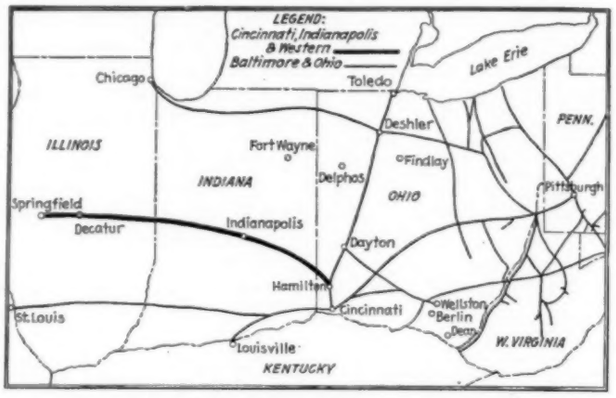
There are outstanding $5,350,000 preferred and a like amount of common stock, which at the price offered would involve a total amount of $2,086,500. In addition to the preferred and common stock, there are outstanding bonds and equipment trusts amounting to $4,211,000. The preferred stock is entitled to 5 per cent non-cumulative dividends but no dividends have been paid on either issue. C. I. & W. preferred, prior to the announcement was selling at $19.88 and the common at $12.

The sale has been negotiated by Kuhn, Loeb & Co. The Baltimore & Ohio will pay $24.50 and $14.50 for the preferred and common stock respectively, and the shareholders of the C. I. & W. will receive $24 and $14, the other 50 cents accruing to the bankers for their services.

The letter sent by the directors of the stockholders states that the latter are required to deposit their securities with the Equitable Trust Company before February 8, which date may be extended by the Baltimore & Ohio with the consent of a committee of the C. I. & W. board. The sale is to become effective as soon as 95 per cent of the total stock has been deposited, or within 5 days after the expiration date of the offer, provided in the latter case that the percentage of stock deposited is acceptable to the B. & O.

The Cincinnati, Indianapolis & Western extends from Cincinnati, Ohio, (which it reaches by trackage rights over the B. & O. from Hamilton) through Indianapolis, Ind., Decatur, Ill., to Springfield, Ill., with a branch to Brazil, its mileage totaling 347, of which 309 is owned and the remainder is trackage rights. It was formerly a part of the Cincinnati, Hamilton & Dayton—controlled by stock ownership—but was split off from it in the receivership which began July 2, 1914. The present Cincinnati, Indianapolis & Western was reorganized in 1915 except its Sidell & Olney branch. In 1922, it acquired the Brazil branch by purchase from the Chicago & Indiana Coal Railway.

The original Cincinnati, Hamilton & Dayton had a total of about 1,000 miles of line. After the segregation of the C. I. & W., there remained about 600 miles. In 1917, the more important part of this mileage, totaling 397 miles, was acquired by the Baltimore & Ohio and is now operated as its Toledo division. The portions then acquired by the B. & O. included the C. H. & D. main line from Cincinnati to Toledo and the line from Dayton to Wellston with certain branches. The mileage not acquired included notably that between Dayton and Delphos,



Relation of the C. I. & W. to the B. & O.

95 miles, from Berlin to Dean, 37 miles, from Findlay to Fort Wayne, 80 miles, etc. The C. I. & W. portion of the original C. H. & D. system was separated from the C. H. & D. prior to the B. & O. acquisitions of the parts of the latter.

In a letter to stockholders, signed by Frederick H. Ecker, president of the Metropolitan Life and vice president of the C. I. & W., the board says in part:

"Your directors have carefully considered this offer. They are convinced that if the road is to be put upon a satisfactory paying basis in this highly competitive territory a large amount of new money must be raised in some way in the immediate future; the local traffic has seriously suffered because of the condition of the coal business in Indiana and Illinois and there are a number of troublesome problems to be dealt with having to do with additional capital. For these reasons they have come to the conclusion that the foregoing offer is a favorable one and they heartily recommend its acceptance by the stockholders and holders of voting trust certificates."

The Baltimore & Ohio has issued a statement in which it says:

"Assuming the shareholders generally agree to sell on the basis indicated, and the Interstate Commerce Commission approves of the purchase of the Baltimore & Ohio, it will add to the Baltimore & Ohio System approximately 300 miles of line, extending from Hamilton, Ohio, to Indianapolis, Ind., and its line to Springfield, Ill. Its close association with the Baltimore & Ohio and the fact that more than one-third of its traffic is interchanged with that system, caused it to be allocated to the Baltimore & Ohio under Professor Ripley's and the Interstate Commerce Commission's tentative plan for the consolidation of railroads, as well as under the subsequent recommendation made by the New York Central, the Nickel Plate and the Baltimore & Ohio representatives. With the acquisition of this line, the Baltimore & Ohio would be established as an initial line in Indianapolis, one of the important traffic centers of the country, and also form an important link in the already existing through service via the Baltimore & Ohio and Monon between Cincinnati and Chicago."

The Cincinnati, Indianapolis & Western in 1923 and 1924 had corporate net income after charges of slightly over $90,000, equivalent to about $2 a share on its preferred stock. About 33 per cent of its traffic is coal, and 26 per cent manufactures and miscellaneous.

Permit Plan to Aid Florida Rail Congestion

Receivers commodity committees established to cooperate with roads and prevent discrimination

By M. J. Gormley

Chairman, Car Service Division, American Railway Association, Washington, D. C.

FLORIDA with its tremendous increase in business in the past few years, and particularly during the past year when it has exceeded the widest stretch of imagination, has and is presenting many difficult and unusual transportation problems for the railroads serving that state. Although anticipated to some extent by the carriers it has been an impossibility for anyone to visualize with any degree of accuracy the extent and rapidity with which the traffic would increase. The business of the state has moved steadily upward in the past year in a ratio probably unparalleled in the country at any time in the past.

The rail lines serving the state are all spending millions of dollars in adding to and expanding the facilities for the purpose of handling this Florida traffic. In some instances the time of certain contemplated improvements, spread over a period of years, has been cut in half, and authorizations made for the immediate spending of huge sums of money in order to meet this situation.

However, that the increase in business is taxing the capacity of the carriers beyond the point where they are able to satisfy all demands is not surprising when one reviews the startling rapidity with which the people of Florida are attempting to build up the state in the way of municipal, county and other public facilities to take care not only of the natural increase in population, but to also meet the anticipations of those coming to Florida both from the standpoint of pleasure and curiosity and also as permanent residents to indulge in legitimate business. What the people in Florida are today attempting to do in a short space of time has in the past in other parts of the country usually taken years to accomplish and the rapid growth is far beyond anyone's expectations.

Meanwhile not only have the carriers naturally been congested at times and considerably handicapped in the handling of traffic, but they have also had their additional construction work to contend with and each has to some extent interfered with the other.

One reason probably more than any other which has brought about the conditions existing in Florida today, not only with the carriers but also with every other public utility, as well as private enterprise, has been not only lack of information as to prospective demands but also a lack of definite information as to immediate requirements. Had this information been available precautionary measures could and would have been taken by the carriers long before this, which would in all probability have produced results to the greater satisfaction of everyone. There was, however, no machinery in existence available for securing such information and neither had any method been devised for obtaining it.

The transportation problem in Florida during the past year has largely been a receivers' problem. When the present embargo was put in effect on certain shipments coming into the state the carriers followed the standard methods heretofore used throughout the country, but conditions in Florida have been so wholly exceptional that the standard practices of years have been inadequate to meet the present situation. The Interstate Commerce Commission be came interested in the matter, and held a public and informal hearing in Jacksonville on November 24, 1925, with reference to this difficulty and the inability of receivers of freight in the state to obtain all of their commodity requirements. All shippers and receivers of freight in the state were invited to appear at this hearing with the end in view of obtaining all the information possible and reviewing the conditions complained of by the public.

Southeast Shippers' Advisory Board

As an outgrowth of this meeting the shippers and receivers in attendance made a request on the Car Service Division of the American Railway Association to organize a separate unit of the Southeast Shippers' Advisory Board, to be known as the Florida Division, Southeast Advisory Board, and organize along the same lines as are the twelve regional advisory boards already organized throughout the country by the Car Service Division. It was felt through the principles of these board organizations, consisting of co-operative methods between the individual railroads, the shippers and receivers of freight and all interests of public life, that the situation could be relieved and a solution found for the unusual problems now confronting everyone in the state. The Car Service Division immediately took necessary steps to meet the demands of the public to organize this advisory board. By bringing a large part of its organization into the field and by intensive work the board was successfully formed at a meeting held in Jacksonville on December 18, at which there were in attendance 315 shippers and receivers of freight, in addition to 77 railroad officers and representatives.

In order to take care of the problems of the receivers of freight, which at the present time are the most serious ones from a transportation standpoint, some new plan had to be devised to supplant the existing system of permitting freight to enter the state in volume, which would not cause further congestion, would relieve the existing conditions, and would remove some of the obstacles the carriers have been encountering in endeavoring to take care of the necessary current demands on them. At the pre-organization meeting held on December 5 in Jacksonville the Car Service Division presented a tentative plan to the Organization committee which it was felt and believed would bring satisfactory results, permit freight to be shipped into Florida from all parts of the country without unnecessary delays and interference, as well as without discrimination between individual receivers, commodities or communities, provide a basis for a fair and equitable distribution of the available transportation service.

The plan proposed by the Car Service Division merely reverses the operation of the regional advisory boards throughout the country where the shippers estimate their

car and transportation requirements for a subsequent period. The matter of greatest importance at the present time is to take care of the immediate inbound requirements, whether they be of a public necessity nature or otherwise, to enable the meeting of the rapid development within the state. The operation of the permit plan itself is very simple, and although dependent upon absolute honesty and fairness in the dealings between the receivers and the communities, is entirely practical and feasible, as has been demonstrated through the workings of every board so far organized, based on the same principles. The permit plan advanced by the Car Service Division and the procedure to be followed in bringing it about may be briefly summarized as follows:

1. The state has been divided by the board into nine terminal receiving districts, each of which will be headed by a terminal district chairman. In each of these districts, to which the Car Service Division has assigned representatives to assist in the work, there will be organized what are known as receivers' commodity committees, composed of receivers of the various classes of commodities received within the district. Every town and community in each of the terminal districts as may be determined will have its different commodity committees composed of the receivers of these commodities. These commodity committees will be thoroughly representative of all interests in the community. By way of illustration, and the procedure of which will also apply to all other commodities, take the case of lumber.

2. In each community in the various terminal receiving districts there will be organized a lumber committee, composed of the receivers of lumber. These local dealers and receivers will, say, on the fifteenth of each month, specify on forms, which will be provided, their actual requirements, not for stock but for immediate use, of lumber required during the following month, in addition to which they will also show their daily unloading capacity, as demonstrated by past performance, and any other pertinent information. The detail of this will be that the local lumber dealers, composing the local lumber committee, will meet together in conference and decide among themselves what they can get along with for the next month. The form will then be made out by the individual receivers, given to their local chairman and forwarded by him to the chairman of the lumber committee of the terminal receiving district.

3. The chairman of the lumber committee of the terminal receiving district will, in turn, consolidate the requirements of the local dealers in each community throughout the district on another form, and which will cover the total number of carloads of the particular commodity required throughout that district for the month following its preparation. This form will be transmitted by the chairman of the particular receivers' commodity committee in each district, whether it be lumber, brick, furniture or any other commodity, to the chairman of the terminal district.

4. The total requirements of all commodities required in the district will then be consolidated on a third form. This form, a consolidation of the total requirements of all commodities within the district for the monthly period, and to which is attached as supporting evidence the individual statements of the receivers of the various commodities, will then be filed with each railroad in the district, after it has been passed upon by that committee.

5. The superintendent of transportation, or the permit issuing officer of the railroad, will enter the reports on further forms which give a complete picture to the officer of the individual railroad handling this work as to the requirements of the individual receivers.

It should be borne in mind that the forms used by the individual receivers, starting with, say, by way of illustration, Form No. 1 for lumber, Form No. 2 for, say, automobiles, Form No. 3 for, say, machinery, may run up to any given number necessary to cover all commodities received in any given district, in order to have a form number for each individual commodity included in the plan. The consolidated form could if the individual forms ran up as high as No. 25, start with No. 30, etc.

This whole plan designed for the benefit of each and every receiver of freight in the state, the smallest and the largest, is based upon the local committees of each commodity being fair with each other in specifying their requirements and not specifying that they need ten carloads of a certain commodity during the month when five will serve their purpose.

Receivers of Freight on Equitable Basis

It is absolutely necessary and essential for the railroads to have the information in the manner specified above. They, of course, cannot, until their present plant has been expanded, begin to furnish all of the transportation demanded. They can, however, when this plan is put into effect, divide the available transportation on an equitable basis among all receivers. The manner of doing this will be on a percentage basis. In other words, a certain terminal district requires, say, 5,000 carloads a month. The railroad upon receiving this information knows that it can only handle, say, about 3,000 loads, or 60 per cent of the transportation demanded. It can, with this information, go ahead and authorize permits for 60 per cent of receivers' requirements in the district, thus giving everyone his fair and equal share of the transportation demanded without any claim of discrimination as between one receiver and another.

The individual receivers will, after they have submitted statements of their requirements to their local and individual commodity committees, make their application to the railroad agent for permits. The plan provides for them specifying on their individual statement of requirements the railroad in their community over which they wish delivery to be made to them and they will, of course, make their application for permits to the agent of that line. These the agent will send to his permit issuing officer, who with the information available as to the total requirements needed in the various districts, and also with his knowledge as to the capacity of the railroad to furnish transportation during the period in question, can arrange to issue permits on an equal percentage basis to all interests concerned. This should, and it is believed will, obviate any question of discrimination as between receivers and any one of them getting more than their fair share of permits.

That the shippers and receivers in the state of Florida are interested in this permit plan is not only demonstrated by the co-operation being extended the board movement, but also by the fact that already in a short space of time —less than two weeks—some of the districts are thoroughly organized and not only are their committee organizations complete, but a full statement of their transportation requirements for a 30-day period has been obtained in the manner outlined above.

This plan, which is a new one in railroad annals and designed to meet a new and trying situation, will it is believed help solve to the satisfaction both of the receivers of freight and the railroads serving the state of Florida one of their most trying problems of the present time. It will also serve as a guide in the future for the handling of any similar emergency conditions arising anywhere else in the country.

THE DULUTH & IRON RANGE is motorizing a passenger coach to replace a train on the 33-mile branch line from Allen Junction, Minn., to Virginia.

THE VOLUME OF PASSENGER TRAFFIC on the Missouri-Kansas-Texas into and out of St. Louis rose to a new high point on January 3 and 4 when the Texas Special carried a total of 516 passengers into St. Louis, as compared with 449 for the same days in 1925. The Katy Limited carried 219 passengers as compared with 143 in 1925 and the Katy Flyer 126 as compared with 116 last year. On January 3 the Texas Special carried 326 passengers, the train consisting of two diners, 11 sleeping cars, a baggage car and a coach. The previous high record for a train was 249 passengers established by the Texas Special on July 4, 1925.

Louisville & Nashville Earnings

Net railway operating income in 1925 *about* 25 *per cent over* 1924 *with* 11 *per cent increase in traffic*

THE Louisville & Nashville's latest report of earnings—for November—shows net railway operating income for the first 11 months of 1925 as 25 per cent greater than that for the same period of 1924. The striking feature is that it secured this increased net with an increase of but 11 per cent in traffic. In 1924, the road had a net corporate income after charges equivalent to $12.07 on its capital stock. The road has paid 6 per cent dividends since August, 1924. From August, 1916, to May, 1923, it paid 7 per cent. On the latter date it declared a stock dividend of 62½ per cent amounting to $45,000,000. The dividend rate on the increased amount was for a while 5 per cent, and, as the result of continued or increased prosperity, was raised to 6 per cent. The dividends in 1924 totaled $7,020,000, and they were earned twice over. Of these payments, 51 per cent accrued to the Atlantic Coast Line.

The Louisville & Nashville is itself a large system and is part of a still larger one. The Atlantic Coast Line acquired a 51 per cent stock interest in the property in 1902. The Louisville & Nashville itself operates 5,043 miles of line spreading extensively over the territory between the Ohio river and the Gulf of Mexico. In addition, it owns about 72 per cent of the stock of the Nashville, Chattanooga & St. Louis, and most of the stock of the Louisville, Henderson & St. Louis, both of which properties are separately operated. Jointly with the Southern it owns a majority interest in the Chicago, Indianapolis & Louisville or Monon. Jointly with the parent company, the Atlantic Coast Line, it has leased the Clinchfield and the Georgia Railroads. With the Atlantic Coast Line also, the Louisville & Nashville has a half interest in the Western of Alabama, the other half interest being owned by the Central of Georgia. Ownership of stock by the Coast Line, the Louisville & Nashville and the Georgia bring into the system, also, the Atlanta & West Point. Inclusion of these other lines brings the mileage of the lines in which the Louisville & Nashville is interested, directly or indirectly, to a total of over 8,000. The Atlantic Coast Line system, inclusive of the Louisville & Nashville and its affiliated properties, thus totals over 12,000.

The Louisville & Nashville has benefited greatly from the prosperity of the southern part of this country in recent years. The South's new industrial development has assisted the property principally in the Birmingham district, although it is, of course, true that the Birmingham traffic—except as relates to the coal or ore brought in by the L. & N.'s own feeder lines—has had to be divided among several keen competitors. It is a question whether the L. & N. is near enough to Florida to have benefited from the Florida boom but, as was shown in an article in last week's issue of the *Railway Age,* no doubt the Atlantic Coast Line has derived enough traffic from Florida's new prosperity to have sufficed for the larger system as a whole.

Has Benefited Like Pocahontas Region

It is in connection with coal that the Louisville & Nashville has done its best from a traffic and revenue standpoint. In respect to this commodity, the property has been favored in the same manner and in the same degree as the roads in the Pocahontas district. It will be some time before figures of the classified commodity tonnage for the year 1925 are available. In 1924, however, the traffic of the Louisville & Nashville was divided about as follows: Products of agriculture, 6 per cent; animals and products, about 1 per cent; products of mines, 69 per cent; products of forests, 8 per cent; manufactures and miscellaneous, 12½ per cent, and l.c.l. about 3 per cent. Bituminous coal constituted 52½ per cent. This coal is secured in several fields. These include principally the fields in eastern and southeastern Kentucky. It is here that the greatest development has taken place and where exist the greatest possibilities for the future. Other fields include the Birmingham district, coal from which has an increasing tendency to be used locally but which district the L. & N. serves with some 600 miles of mineral branches, the western Kentucky field, the eastern Tennessee field and operations in southern Illinois.

The story of the Louisville & Nashville's progress this last year has been briefly indicated by the statement that net railway operating income in the first 11 months of 1925 was 25 per cent greater than in the same period of 1924. This increase in net was the result of an increase of about 11 per cent in ton-miles, the greater increase in net than in traffic indicating probably increased efficiency, and also that the road is being favored by the familiar economic law of increasing return. In the article about the Atlantic Coast Line, which appeared in last week's *Railway Age,* some interesting comparisons were made of the traffic in various districts and on various roads in the first 10 months of 1925 as compared with the same period of 1920. It was shown that on the railroads of the country as a whole, net ton-miles increased one-quarter of one per cent, that the eastern district had a decrease of 5 per cent, the western district a decrease of 2.5 per cent, the southern district an increase of 11½ per cent, and the

TABLE I—LOUISVILLE & NASHVILLE OPERATING RESULTS, SELECTED ITEMS, 1916 TO 1924

Year	Mileage	Revenue ton miles	Revenue passenger miles	Rev. per ton mile, cents	Total operating revenues	Total operating expenses	Net operating revenues	Op. ratio	Net railway operating income*	Net after charges	Net charges for additions and betterments
1916	5,058	6,932,569,000	583,801,000	0.689	64,928,121	42,042,111	22,886,009	64.75	.....	17,062,285	4,195,153
1917	5,073	7,979,203,000	743,699,000	0.698	76,907,387	52,998,759	23,908,629	68.91	.....	16,464,015	12,795,083
1918	5,038	8,443,048,000	947,717,000	1.595	101,392,792	79,556,971	21,835,821	78.46	19,568,935	11,019,357	6,201,074
1919	5,033	8,442,729,000	890,375,000	0.910	107,514,966	92,544,138	14,970,828	86.08	11,884,568	11,176,282	4,739,214
1920	5,041	9,368,464,000	884,143,000	0.977	105,990,463	103,363,197	2,627,266	97.30	3,283,698	7,863,651	14,348,040
1921	5,041	8,236,443,000	685,590,000	1.063	117,485,777	107,408,938	10,076,838	91.42	3,874,426	Def. 336,962	21,142,876
1922	5,039	9,090,687,000	669,329,000	0.998	121,138,840	99,604,496	21,534,344	82.22	17,637,714	10,598,019	5,847,924
1923	5,040	10,578,359,000	767,475,000	0.962	136,375,673	109,865,090	26,510,583	80.56	20,673,143	13,498,935	25,605,512
1924	5,043	11,204,385,000	710,720,000	0.920	135,505,677	107,126,897	28,378,780	79.06	22,291,374	14,132,794	23,496,540
11 mos., 1925.	5,044	.....	.....	.....	129,666,403	98,923,748	30,742,655	76.29	24,711,529	.....	.....

*Standard return or annual average net railway operating income for three years ended June 30, 1917, was $17,310,495.

Pocahontas region an increase of 31 per cent. In the first 10 months of 1925, as compared with the first 10 months of 1920, the Louisville & Nashville had an increase in net ton-miles of no less than 32.4 per cent. The Louisville & Nashville's expansion of traffic has continued over several years. Thus, in 1924, it moved about 77 per cent more revenue ton-miles than in 1916. The increase in 1924 over 1916 on the railroads of the country as a whole was only 8 per cent.

The fact that the mines served by the Louisville & Nashville in the eastern and southeastern Kentucky fields are non-union is, of course, the chief reason for the marked expansion in business. In 1925, the advantage of serving non-union fields was heightened by the Jacksonville wage agreement. This has worked out in two ways.

First, the union mines north of the Ohio have found it difficult to compete on a price basis with the non-union mines south of the river. The closing down of non-union mines opened up new markets, but it also did more. The Louisville & Nashville has always been

TABLE II—COMPARISON OF SELECTED FREIGHT OPERATING STATISTICS

Item	10 Months 1925	10 Months 1920	Per cent of change Inc.	Per cent of change Dec.
Mileage operated	5,027	5,024	...	...
Gross ton-miles (thousands)	22,977,419	16,954,957	35.4	...
Net ton-miles (thousands)	11,110,166	8,393,026	32.4	...
Freight train miles (thousands)	17,807	15,746	13.1	...
Freight locomotive miles (thousands)	19,605	17,691	11.7	...
Freight car miles (thousands)	562,062	418,833	34.2	...
Freight train hours (thousands)	1,532	1,475	3.8	...
Tons of coal consumed by freight locos.	2,131,839	1,895,795	10.9	...
Car miles per day	30.3	31.3	...	3.1
Net tons per loaded car	32.1	30.1	6.6	...
Per cent loaded to total car miles	61.5	66.6	...	5.1
Net ton-miles per car day	599	627	...	4.4
Freight cars per train	32.6	27.6	18.1	...
Gross tons per train	1,290	1,077	19.8	...
Net tons per train	624	533	17.1	...
Train speed, miles per train hour	11.6	10.7	8.4	...
Gross ton-miles per train hour	14,994	11,495	30.0	...
Net ton-miles per train hour	7,250	5,690	27.5	...
Lb. coal per 1,000 gross ton-miles	163	202	...	19.4
Loco. miles per loco. day	90.7	90.3	0.5	...
% Freight locos. unserviceable	15.0	19.1	...	4.1
% Freight cars unserviceable	10.8	9.7	1.1	...

plagued by difficulties of car supply. The recent concentration of coal production in non-union coal areas has helped operations measurably.

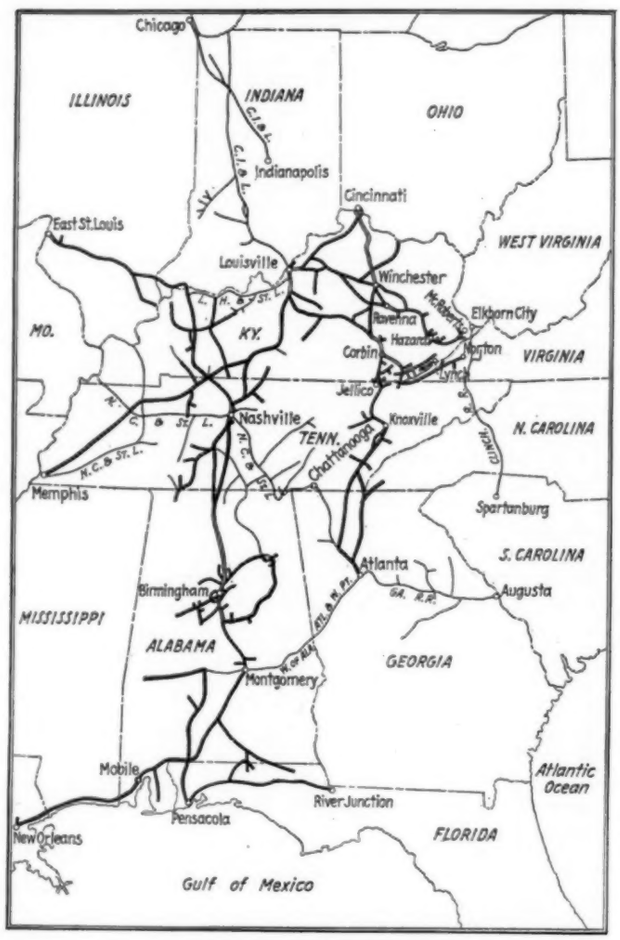
Southeastern Kentucky or Harlan Field

The Louisville & Nashville first built into the southeastern Kentucky coal district in the early 80's when it extended a line to Jellico, which is served also by the Southern. In the late 80's and early 90's, it built from Corbin (north to Jellico) to Middleborough in this same field. In 1910-11, a branch of this line, paralleling it on the North, was built up the Cumberland river to a terminus at Lynch. The fields served by these lines are known under various names. The district is designated by the railroad as its Cumberland Valley division. The area is known generally as the southeastern Kentucky field, and the district in whole or in part is identified under such names as Middleborough, Appalachicola, Black Mountain, Harlan, etc. The coal is highly volatile and is considered excellent for gas, by-product and general purposes. Among the leading operators in this field are included the Steel Corporation, the International Harvester Company and the Ford Motor Company. The coal from the field moves both north and south. It is assembled at Corbin, and the L. & N. operates the 182 miles between Corbin and De Coursey (across the river from Cincinnati) as a single engine district. A considerable volume of the coal moves from Corbin via the Lebanon branch to Louisville.

In 1904-5, the L. & N. extended its line to Jellico south to Knoxville, thereby reaching the East Tennesee coal fields.

Eastern Kentucky or Hazard Field

Development of the eastern Kentucky field is of comparatively recent date. In 1908-11, the L. & N. acquired the Louisville & Atlantic, operating between Versailles and Beattyville, and the Lexington & Eastern from Lexington to Jackson and crossing the L. & N. at Winchester. The lines were reconstructed and the latter



The Louisville & Nashville

extended through the coal fields along the North Fork of the Kentucky river, thus passing through the Hazard district and reaching the Elkhorn fields. The terminus of the line is now at McRoberts. At the same time, a cut-off between Irvine and Winchester was rebuilt and the line from Winchester to Cincinnati was rebuilt and double tracked. The terminus at McRoberts is only about 2½ or 3 miles from the Sandy Valley & Elkhorn on the other side of a ridge sufficiently narrow so that the Consolidated Coal Company operations load on either side. The Chesapeake & Ohio comes into this same area east of the ridge and slightly to the north. The Hazard coal is a high-grade domestic and steam coal. The Elkhorn coal is high volatile coal, much prized as a by-product coal. Nearly all the coal from these fields on the L. & N. moves to the north. It is assembled at Hazard or Craw-

ford and thence moves to Ravenna. The latter point is 164 miles from McRoberts and 125 miles from Cincinnati.

Clinchfield Lease

The development of the eastern Kentucky field is said to be but in its beginning. There are possibilities for many more mine branches and spurs, but the L. & N. seems to be pursuing a cautious course in building new extensions, preferring rather to put the money in intensive development. The problem of car supply is a particularly troublesome feature. In June, 1924, the Interstate Commerce Commission gave its approval under certain conditions of a joint lease for 999 years' of the Clinchfield by the Atlantic Coast Line and the Louisville & Nashville. The Coast Line connects with the Clinchfield at Spartanburg through its subsidiary, the Charleston & Western Carolina. There is no direct connection between the L. & N. and the Clinchfield. One of the conditions of the Interstate Commerce Commission's approval was that such a connection be built, and also a connection between the line to McRoberts and the Cumberland Valley line to Norton. These connections are expected to give the Clinchfield coal operators additional means of reaching northern markets, the L. & N. operators an additional route to the Southeast, and, most important of all, to assist the L. & N. as respects car supply. The plans for the new lines have not yet been presented to the commission, extension of time having twice been secured. No doubt, also, L. & N. operations would be greatly assisted were the frequent congestion at Cincinnati remedied. In this connection, it should be noted that the Big Four is the leading recipient of L. & N. coal at that point.

Operating Statistics

Table I, showing selected items of Louisville & Nashville operating results, gives a brief picture of the property's increased prosperity since 1916. Of interest in this table is the column of expenditures for additions and betterments, showing particularly the large amounts spent in 1923 and 1924. Table II is a more detailed picture based on the operating statistics. The latest figures for 1925—those for the 10-months period—are compared in this table with the figures for the same period of 1920. One will notice that the 32.4 per cent increase in net ton-miles in 1924 was moved with but 13.1 per cent additional freight train miles, only 11.7 per cent more freight locomotive miles, and with but 3.8 per cent more freight train hours. There was but a slight increase in the average car load, but a slight change in the car miles per day, but there was an increase in train-load and train speed with the result that the gross ton-miles per train hour increased 30.0 per cent and the net ton-miles per train hour 27.5 per cent. Of significance is the decrease of 19.4 per cent in the pounds of coal per 1,000 gross ton-miles. Unquestionably, the most striking figure in the table is the 90.7 miles per locomotive day. (In the first ten months of 1925 the railroads of this country as a whole reported a figure of but 57.5.) The Louisville & Nashville operations are characterized by long engine districts and preference for speed rather than heavy loading. This probably explains the figure of 14,994 gross ton-miles per train hour, which, while 30.0 per cent over 1920, is not large for a road on which over half the traffic is coal.

The Louisville & Nashville, like its parent company, the Atlantic Coast Line, seems to have been especially favored by the process of normal development of its territory and by very special circumstances. The latter in the case of the Coast Line was the Florida traffic; in the case of the Louisville & Nashville it is the special advantage now accruing to the non-union coal areas due primarily to the Jacksonville wage agreement. But in both instances it was a case of prosperity being added where there was much prosperity before.

Improving the Operation of Local Freight Trains*

By F. W. Rosser,
Superintendent of Transportation, Erie Railroad, Chicago

IS the way freight or local freight train by far the most expensive train on the road, as we have been taught to believe, and if it is, what makes it so? We know that the rates of pay are higher; that ordinarily the local is the overtime earned; that frequently crews carry more men. Quite often they are required to do local switching in addition to their merchandise work, and on some roads it is a part of their assignment to transfer or consolidate merchandise cars enroute to make set-outs or solid cars for regular transfer stations. Is the latter method proper, or should the freight be loaded into the car in the least possible time without regard for destination, and rehandled at the terminal or next transfer station where experienced freight-handling organizations are maintained?

Does not the flow of local traffic, especially in parts of the country where natural resources are incompletely developed change constantly in both volume and direction, necessitating frequent changes in service and in the rearrangement of merchandise schedules? Where local trains are also required to handle short cars and pick up at intermediate stations, should they attempt to group cars in station or division order, or is it more economical to pick up cars enroute without regard to classification? Conductors discourage the blocking of cars because they feel that work of this character can be done more efficiently at terminals where regular switch crews are employed.

Some of the Considerations

Is it possible to establish any hard and fast rule as to the most economical tonnage rating for local freight trains, or should we consider

(1) The length of the operating district. Every freight train district has its own movement characteristics and no statement or discussion should change tried out operating methods or practices which have been found to meet local conditions on any railroad. The amount and character of the work to be performed are usually the governing factors.

(2) Density of traffic—the number of trains to be met and passed. This is a most difficult problem, especially on single track operation. The opposing trains over a long district often retard the progress of the way freight and preclude the possibility of increasing the train load. Because of this interference some local trains are run solely for merchandise service. Where the density is not so great they can handle considerable tonnage in addition to local cars without creating much overtime. The amount of tonnage, however, should be a matter for consideration day by day. In double track territory, the opportunity to add tonnage is much greater than on single track. In addition to a reasonable amount of tonnage from the terminal, some roads depend entirely upon this class of service to move business received currently from intermediate connections unless, of course, the volume

*An abstract of a paper presented before the Western Railway Club, Chicago, on December 21.

warrants full tonnage trains, and this method produces more ton-miles without any perceptible increase in working hours.

(3) Delays in handling station switching. This is a fertile field for train masters, station supervisors, and transportation experts, where employed to check station activities frequently. A carefully prepared switch list will often result in accelerating the movement sufficiently to permit a time card meeting point at the next station, a chief factor in the operating success of a train. If the crew is active, they will appreciate such co-operation.

(4) Time consumed in loading or unloading L.C.L. freight. The enthusiastic support of station forces in anticipating the arrival of the local and having everything in readiness to "pinch hit" the moment the train stops at the station or freight house platform is essential. The question of proper loading and stowing has been agitated for some time, and this part of the operation can usually be improved upon. Frequent meetings of station agents, freight house foremen, checkers, and bill clerks often cure an epidemic of bad loading and improper billing.

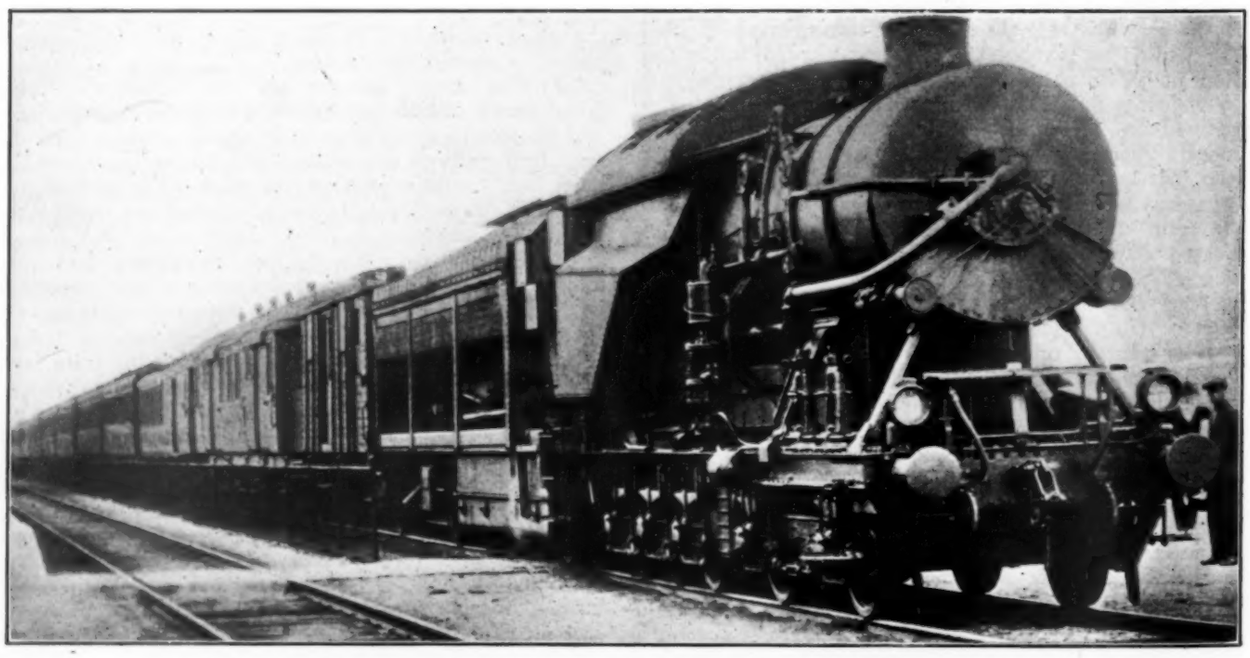
(5) Physical operating handicaps. These may include grade conditions, coal and water stations, house and team track facilities, passing tracks and crossovers, all of which are important factors in tonnage campaigns.

(6) Is it better economy because of train mile costs and ton-mile production to shorten the local districts than to reduce tonnage ratings? Because of the varying conditions on different railroads, it is not possible to set up standards of operation. There are a number of factors to be considered in starting and building up a local freight train, but every officer is striving to get the maximum results at the minimum cost. Some roads have shortened the local districts in heavy switching and traffic-originating territory and load their trains accordingly, while others which operate through less densely populated territory are obliged to adjust train tonnage to fit in with longer runs.

The shipping public is becoming more generally appreciative of the efforts made by the railroads in their desire to provide better service, particularly in the distribution of the freight that is purchased today for tomorrow's delivery, and it is not unreasonable to assume that as we become more accustomed to the demands of these modern methods in the industrial field, we will learn to make more liberal use of our transportation agencies; in this the local train becomes a very important factor.

Local freight trains can be made to produce gross ton-miles if closely supervised, and with special attention to the daily loading of merchandise at the larger stations and concentration points, taking advantage of every opportunity to push trains along. With reasonable co-operation from all members of the crew all of these elements, properly focused, should bring increased train loading. These old-fashioned methods teach from experience the wisdom of continuing their use until such time as other methods lead to better things. By other methods, I mean the distribution of less than car load freight by motor truck as an auxiliary something which has already been tried with some success.

Now a word about grouping loaded cars for destinations or producing what is called a "main tracker." How many would preferably go back to the old method of assembling through or tonnage trains to be broken down and switched at each terminal? Compare that system with the present method of building up solid trains at initial terminals which do not have to be switched except to add blocks and change cabooses, over a number of operating divisions and with extended locomotive runs. The new way has assumed an even greater degree of importance than any other transportation development. The growth and general adoption of through classification are being manifested every day by a reduction in the amount of switching at terminals, in the time required on through schedules, in claims and in overtime and per diem expense, and an increase in the car and engine miles per day, all of which are reflected in the transportation costs per net ton-mile.



One of Five Turbine Locomotives Recently Put in Service in Germany

Majority of I.C.C. Oppose Gooding Bill

Hearing, which began on Monday, is enlivened by speeches and arguments

WASHINGTON, D. C.

NINE of the eleven members of the Interstate Commerce Commission are opposed to the Gooding long and short haul bill, while Commissioners Campbell and McManamy favor its passage, according to testimony given by Commissioner Esch before the Senate committee on interstate commerce when the hearings on the bill were resumed on January 18. The reasons for opposing the bill were given in a statement which Mr. Esch read as representing the views of seven commissioners, while the views of four others were expressed in separate statements. Commissioners Eastman and Woodlock did not join in the statement of the majority but were unwilling to approve the bill. Mr. Esch said in part:

We can see no necessity for the passage of a bill which will have the effect of eliminating to a considerable degree if not entirely the competition between rail and water carriers between points between which both forms of transportation are now in operation, nor can we see any reason why producers and manufacturers at interior points should be excluded from water-competitive points where carriers would be willing under proper fourth section relief to establish rates without unjust discrimination or undue prejudice that would enable the interior producer and manufacturer to engage in business at such points. There is no proposal in the amendment to prohibit the granting of fourth section relief to meet competitive conditions created by rail carriers, and in our opinion there should not be. We believe there is no more reason for an absolute prohibition against the granting of relief to meet competition created by the movement of traffic by water, than where such competition is created by the movement of traffic by rail and are unable, therefore, to give our approval to the proposed amendment.

The proposed bill provides that section 4 shall be amended so as to prohibit the granting of authority under that section to charge lower rates for longer than for shorter distances over the same line or route in the same direction, on account of "water competition, either actual or potential or direct or indirect." Under this section at present no relief may be granted to charge lower rates for longer than for shorter distances on account of potential water competition. Relief may be granted, however, to meet actual water competition. Competition of this character is generally understood to mean that which occurs when railroads and water carriers are in direct competition with each other for traffic between points served by both rail and water lines, for example, between points on the Atlantic seaboard, Gulf ports and points on the Pacific coast. There are several situations of this kind where rail lines have been granted relief to charge lower rates for longer than for shorter distances to meet the rates of water carriers operating between the same points.

The proposed amendment provides that authorizations under the fourth section on account of water competition lawfully in effect December 7, 1925, shall not be required to be changed except upon the further order of the commission. There is some doubt as to the meaning of this provision. Apparently it would enable the commission to leave in effect for a reasonable period fourth section orders granting relief entered prior to December 7, 1925, but in view of paragraph 1 of section 4 which makes it unlawful to charge more for a shorter than for a longer distance over the same line or route in the same direction, the shorter being included within the longer distance, except by authority of the commission, and the prohibition in the proposed amendment against the granting of any authority to charge lower rates for longer than for shorter distances on account of water competition, it is not understood that orders granting relief on account of this competition may be continued indefinitely, or in fact any longer than may be reasonably necessary to revise the rates involved to conform to section 4. If this is not the intent of the amendment, however, that is to say if it is not intended to provide that relief heretofore granted shall be withdrawn as soon as it is practicable to do so but may be continued indefinitely, it is reasonable to anticipate that situations will develop where carriers in the future may desire relief to meet water competition where the conditions will be practically the same as those prevailing in situations where relief was granted prior to December 7, 1925, yet under the proposed bill no relief could be granted in such cases. This would create such an unequal condition as between carriers that it is difficult to believe that it was intended. It must be assumed, therefore, that the intent and purpose of the bill is not only to prohibit any further fourth section relief on account of water competition, but to compel the cancellation of all outstanding relief which has been granted on account of such competition, and in my judgment it will actually have that effect if enacted into law.

The addition of the proposed paragraph (3) would not only leave standing the words in paragraph (1), viz:

> "No such authorization shall be granted on account of merely potential water competition not actually in existence."

quite unreconciled with the new paragraph (3), but would also leave standing paragraph (2) unreconciled with paragraph (3). It should be noted that the proviso in the new paragraph (3) only extends to "authorizations" lawfully in effect December 7, 1925, and does not cover situations protected by applications not yet acted upon as is done in the last proviso of paragraph (1).

Under the wording of the new paragraph (3) it is provided that "no common carrier shall be authorized to charge, etc." If the words last quoted mean "authorized *by the commission*," that meaning should be made plain.

Moreover, the limitation "in effect on December 7, 1925" would seem an attempt to render void by act of Congress authorizations lawfully granted under the law in force and taking effect between that date and the date of enactment of this bill, e.g., orders effective December 8-31, inclusive, and from January 1, 1926, on until the bill is approved, whenever that may be.

The proposed amendment, as stated above, also prohibits the granting of relief on account of indirect water competition. By this it is assumed it is meant that no authority shall be granted to charge a lower rate for a longer than for a shorter distance from any point of origin to any point of destination on account of competitive conditions created at the latter point by the movement of traffic by water from other points of production. This is usually referred to as market competition. For example, it frequently develops that carriers serving manufacturing and producing points in the interior find it desirable or necessary to make rates to a water-competitive point lower than the normal rates to such point to enable the manufacturer or producer in the interior to compete at the water-competitive point with rival manufacturers or producers located at other points who have the benefit of cheaper water transportation to the competitive point. These rival manufacturers or producers may be in the United States or foreign countries.

The effect of competition of this character must be recognized and considered in the construction of freight rates and the commission's administration of the act. This question was involved in one of the earlier cases before the commission, *H. W. Behlmer v. Memphis & Charleston R. Co., et al*, 6 I. C. C. 257, decided June 27, 1894. In this case the commission held that competition of markets did not create conditions justifying lower rates for longer than for shorter hauls and this ruling was sustained by the circuit court of appeals. Upon appeal to the United States Supreme Court, however, the court reversed the finding of the lower court and held that competition of this character should be given the same consideration as other competition.

Since the decision in this case market competition, whether created by the movement of traffic by rail or water, has been considered as grounds for relief from the provisions of the fourth section and such relief has been granted by the commission and is relied upon by carriers in cases now pending before the commission. The law has not been changed in any way since the Behlmer case to justify the exclusion of market competitive conditions as grounds for charging lower rates for longer than for shorter distances over the same line or route. By amendment June 18, 1910, section 4 of the interstate commerce act was changed so as to require the carrier to obtain permission from the commission before charging rates of this character, but the circumstances which would operate to create conditions justifying lower rates for longer than for shorter distances are the same now as when the decision was rendered in the Behlmer case. Situations in which relief has been sought by carriers to

make lower rates for longer than for shorter distances to meet market competition may be illustrated by the following example: Newsprint paper is produced in Wisconsin and Minnesota, also Maine, Canada and the Scandinavian countries Norway and Sweden. Assuming the paper produced in each section to be of substantially the same quality, the consumer at New Orleans naturally will buy from the manufacturer from which he can obtain his material at the lowest cost. In a recent investigation of the commission upon an application filed by the carriers serving Wisconsin and Minnesota mills, the evidence showed that while these mills had been supplying the New Orleans market with print paper for years, they had lost the market to Scandinavian manufacturers on account of the lower prices quoted by the latter and the cheaper freight rate by water from Scandinavia to New Orlean. This meant the loss not only of the business to the interior manufacturers but to the railroads operating from Wisconsin and Minnesota to New Orleans and the latter applied for fourth section relief to make a lower rate to New Orleans than to intermediate points on account of this foreign competition. It was shown that the carriers could make some profit on the proposed lower rates to New Orleans and afford the interior manufacturer an opportunity to compete on a more equitable basis with the foreign manufacturer, but that the carrier would not be willing to make a reduced rate to New Orleans if compelled also to reduce its rates to intermediate points. The majority of the commission felt that the conditions shown by the evidence to be present at New Orleans justified relief from the fourth section and such relief was granted.

Similar situations are developing from time to time at different points in the United States, but under the provisions of this proposed amendment no relief in cases of this kind could be granted and unless in such cases the railroads are willing to reduce their rates at all intermediate points where competitive conditions of this kind develop at points on or in close proximity to the water, the interior producer or manufacturer will necessarily be excluded in many cases from these markets.

Minority Reports

Commissioner Eastman in his separate statement said that strong arguments can be advanced for eliminating water competition as a justification for relief from the provisions of the fourth section, because the railroads have many advantages over water transportation and there is danger that they will subject the water carriers to unfair competition. However, he said, his study has not yet brought him to the conviction that relief ought to be denied in every case where water competition is urged as justification for relief and that is what the bill would involve.

Commissioner McManamy said he could not join the majority in disapproving the bill. The railroads have a field which to a limited extent only can be invaded by water carriers, he said, and he was certain that the public as a whole is not benefited by granting them fourth section relief to meet water competition.

Commissioner Campbell, who was attorney for the Spokane Merchants' Association in fourth section cases before he bacame a commissioner, and who has been particularly active in opposing fourth section relief, gave an argument in support of the bill, saying he believed that the matter is primarily one for the decision of Congress, and approving the bill with such minor amendments as may be necessary to reconcile it with other parts of section 4.

Commissioner Woodlock said that whether fourth section relief is justified or not depends upon the facts in each case and that no universal rule can be applied. The public interest demands that the rail facilities must be put to the fullest use and that each form of transportation should compete with the other.

Commissioner Esch also replied to some of the arguments used by Commissioners Campbell and McManamy in their statements and also to some of the statements made by Gen. T. K. Ashburn, chairman of the Inland Waterways Corporation, in his testimony before the committee, many of which Mr. Esch said were erroneous. Since the passage of the Transportation Act, Mr. Esch said, the commission has not allowed any fourth section relief which has destroyed water competition or brought about a loss to be made up on intermediate traffic; it has not since the war granted any fourth section relief to carriers paralleling the Mississippi or Warrior river waterways, and in no case has it allowed railroads fourth section relief except in cases where it has been shown that the lower rates would increase the carriers' net revenues to some extent. He declined to discuss the application of the transcontinental railroads for fourth section relief on 47 commodities, which is still pending before the commission for decision, but he said that the westbound traffic via the canal which might be divided by the transcontinental lines amounts to about $12,000,000 a year and that he would be surprised if they could get one-fourth of it with the reductions they have proposed.

When Senator Gooding asked how a country could expect to develop under such a rate handicap as that against the intermountain territory Mr. Esch said that the census of 1920 showed Spokane to have a population of 125,000 against 65,000 in 1904 and he doubted if the people of that city would be satisfied now with the 1920 census figure.

Shippers Testify

Testimony on behalf of shippers from various parts of the country in opposition to the bill followed that of Mr. Esch. Senators Gooding, of Idaho; Pittman, of Nevada; and Wheeler, of Montana, interrupted frequently with arguments against the conclusions expressed by the witnesses, in which they insisted that of course the railroads are seeking the complete destruction of all competition via the Panama canal and that of course the low rates proposed to meet water competition must involve losses to be made up on intermediate traffic. They displayed great impatience with the contentions of the traffic witnesses that the railroads could handle additional westbound traffic at very little additional expense in cars which now necessarily move westward empty and that they could thus obtain considerable needed revenue, which otherwise they would have to seek from the traffic already being carried, by obtaining only a fair share of that now attracted by the low water rates. Senator Pittman said the chairman of the Interstate Commerce Commission had been unable to give any explanation of how the railroads figured the cost of handling the traffic on which they proposed to reduce rates and he also took the position that all the competitive traffic handled via the canal is but a drop in the bucket to the traffic of the western roads.

Fred Farrar, general counsel of the Colorado Fuel & Iron Company, said that the development of that company's business has been almost coincident with that of its market on the Pacific Coast but that it is being practically driven from that market by competition of eastern mills that can ship steel from Pittsburgh to the Atlantic Coast by rail for 31½ cents and the Pacific Coast by water for 30 cents more against a rate of 77 cents from Pueblo to San Francisco. If the application of the transcontinental roads is granted, he said, the rate from Pueblo would be reduced to 56 cents, but his company has done business at a loss since 1921 and if it goes under it will mean a loss of $10,000,000 a year in revenue to the western roads. He expressed the opinion that the unregulated operation of the boats through the canal is the problem rather than the long and short haul clause.

E. M. Antrim, traffic manager of the Tribune Company, Chicago, opposed the bill on the ground that it would shut Chicago and the Middle West out of the Pacific Coast markets and that anything that curtails the markets of its advertisers affects the revenue of the paper. Also, he said, the bill would not be good for the country as a whole. He said the American plan of making rates

is on the basis of the value of the service, as distinguished from the European plan of basing them on cost of service, and that the Gooding bill is allied with the European system. The railroads, he said, do not ask to publish rates as low as those of the water lines, but will make them enough higher to give both forms of transportation a chance, but if the bill should become a law the boat lines would raise their rates. He cited some advances that were made on January 1 and others announced to become effective on March 1.

"If Congress in its wisdom decides to give them a monopoly," he said, "they will raise rates more, while the western railroads, having lost revenue because of their inability to compete with the canal lines are now asking to advance their rates 5 per cent."

Senator Gooding, after engaging the witness in an argument as to whether the growth of Chicago has been due to preferential freight rates, finally shouted that "Chicago today is so big as to be a menace to civilization," and said he would never again vote to appropriate money for a waterway that Chicago wanted.

W. H. Day, manager of the transportation department of the Boston Chamber of Commerce, opposed any legislation that will further handicap New England in reaching other parts of the country. Where there is water competition it is a fair proposition to let the railroads try to meet it, he said, and New England has been willing to pay higher rates than New York for transportation via the Canada-Atlantic Transit Company because it realized that the line could not survive without the New York business. He said he would not want to see the Panama canal put out of business because Boston has a boat in and out every day in service through the canal.

Herman Mueller, traffic director of the St. Paul Association of Public and Business Affairs, read a statement by the Minnesota Railroad and Warehouse Commission, which unanimously opposes the bill, largely because of its ultimate effect on the development of Minnesota and surrounding states. The statement said the railroads are not asking authority to meet the water rates but to publish certain rates which will get them some business and fill up empty cars they are now hauling westward, and that if they are not allowed to meet canal competition they will have to advance other rates.

Mr. Thom on the Stand

Alfred P. Thom, general counsel for the Association of Railway Executives, attempted to give a short statement against the bill on January 19 but he was so interrupted by arguments and speeches by Senators Gooding, Pittman and Wheeler that he occupied the witness chair nearly all day. Mr. Thom took the position that, whether the railways are right or wrong in their contentions as to the effect of fourth section relief in particular cases, the question should be decided by such a tribunal as the Interstate Commerce Commission, not by such a body as Congress, not equipped to deal with such questions as those involved in rate cases, and that no inflexible rule should be established. He said the commission has not been liberal in granting applications of the carriers for fourth section relief but that the question of enacting a rigid fourth section rule has stood inquiry for 38 years and has always been decided one way. He pointed out that on the Pacific coast and on the rivers of California, where fourth section relief has been allowed both by the Interstate Commerce Commission and by the California commission for years the boat lines have not been put out of business but that some of them are now being operated by the second generation of the families that started them. He also pointed out that in any event rates to the Pacific coast will still be made by the water lines and that any discrimination against the intermediate country is not the fault of the railroads, but that if the roads are allowed to carry in cars now being hauled empty some of the traffic being taken by the water lines they will earn that much net revenue that will not have to be provided by the other traffic.

He cited figures showing that from January 1 to November 30, 1925, there were moved through certain gateways to the Northwest 78,611 loaded box cars and 107,268 empty box cars and 96,062 loaded refrigerator cars and 31,675 empties. He also cited figures put in a former record by President Donnelly of the Northern Pacific showing that if the transcontinental railroads could get half of the iron and steel traffic passing through the Panama canal at the rates they propose it would add $14,000,000 to their earnings and half of the other traffic on which they propose to reduce rates would bring the total up to $15,743,778. And, he said, this traffic is not all that is involved because the water lines are constantly increasing the amount they are taking from the rail lines. When Senator Gooding made an impassioned speech on the great resources of the intermountain territory Mr. Thom replied that what the territory needs is good railroad service to transport its products to eastern markets and that the railroads have not agreed with it as to the possibility of developing it as a jobbing and manufacturing center in competition with the Pacific coast cities, but Senator Gooding said that what the country wants is to develop a home market.

J. P. Haynes, traffic director of the Chicago Association of Commerce, presented a statement as chairman of the fourth section committee of the National Industrial Traffic League, saying that organization has for 18 years combated every effort to enact a rigid fourth section clause, and opposing any legislation that would further restrict the discretion of the commission in granting fourth section relief when it believes the public interested will be promoted by doing so. Passage of the bill would be disastrous to the commerce of the country, Mr. Haynes said. He also filed letters from individuals and organizations in 29 states opposing the bill; also a telegram from the Illinois Commerce Commission, a statement by the president of the Chicago Association of Commerce and a telegram from the Los Angeles Chamber of Commerce expressing opposition to the bill. John M. Glenn, secretary of the Illinois Manufacturers' Association, said that his organization was represented by the views expressed by the National Industrial Traffic League.

Additional testimony opposing the passage of the Gooding bill was given at the hearing on January 20 by Seth Mann, of the San Francisco Chamber of Commerce, A. C. Callan, of the Portland Chamber of Commerce, S. J. Wettrick, of the Seattle Chamber of Commerce, F. B. McElroy, of the Manufacturers' Association of Chicago Heights, and R. C. Fulbright, of Houston, Tex., representing the Texas ports. Mr. Mann said that the effect of the bill would be to raise the level of freight rates everywhere by depriving roads of the opportunity to earn some revenue on water-competitive traffic. Mr. Wettrick said that the intermountain country would suffer more from a rigid long and short haul clause than would the Pacific coast that has the low water rates anyway. If manufacturing should develop in that section, he said, it would need fourth section relief. He also called attention to the fact that the bill would not disturb fourth section violations in effect on the date the bill was introduced and said it was plainly the purpose to preserve the present situation in which there is no fourth section relief on westbound transcontinental traffic. He said it is not necessary to have such a law to preserve water competition by

restricting the rail lines because the latter will have to make their rates higher than the water rates. Herman Mueller, in a separate statement on behalf of St. Paul and Minneapolis business interests, said that they have no fear that fourth section relief will in any way interfere with the development of navigation on the upper Mississippi river, which they are seeking, and he remembered that the boat lines formerly operating there were put out of business not by lower rail rates, because the latter were higher than the water rates, but by the superiority of the rail service. Mr. Fulbright said that the Texas ports are vitally interested in the maintenance of water transportation but that the proposed legislation is not necessary for that purpose now that the Interstate Commerce Commission has the power to fix minimum rates and does not allow fourth section relief to meet only potential water competition.

Frank Lyon, counsel for the Luckenbach Steamship Company, and W. S. McCarthy, of Salt Lake City, president of the Intermediate Rate Association, spoke in favor of the bill. Mr. McCarthy expressed the opinion that if it were passed the railroads would still try to meet canal competition by reducing rates to the coast terminals but that they would correspondingly reduce the intermediate rates. The hearing was concluded on January 20.

Valuation Introduced Into Northwest Rate Hearing

TESTIMONY designed to show that western railroads are now earning more than the 5.75 per cent fixed by the Interstate Commerce Commission as a reasonable rate of return on the investment was presented by L. R. Bitney, statistician for the Minnesota Railroad and Warehouse Commission. Roads in North Dakota, South Dakota, Iowa and Minnesota earn 5.965 per cent on the average he said. He discussed the division of east and west rates through the Chicago terminal, stating that the division of rates gave the western lines a lesser share of revenue than was their right under a proper sharing of the traffic. He cited September, 1924, as a test period and showed the transfer of business between the Chicago, Milwaukee & St. Paul and the Chicago, Burlington & Quincy with the Pennsylvania and the New York Central. He stated that the St. Paul received $56,723 for the handling of New York Central business in the western district, and contended that if the business had been pro-rated on a proper division the St. Paul would have received $61,432. Under such a pro-rated division of traffic through Chicago, the St. Paul would have received an additional $10,000 from the Pennsylvania during the test period. By applying the figures for the September test period through 1924, he said that the St. Paul would have received $1,393,000 additional revenue from the handling of traffic from eastern lines through the Chicago terminal to the west.

Northwestern railroad valuation figures compiled by the Interstate Commerce Commission were read into the records at the direction of Commissioner Clyde B. Aitchison. Particular attention was given the valuation of the Chicago, Milwaukee & St. Paul and its subsidiary, the Chicago, Milwaukee & Puget Sound. Chairman Aitchison explained that the valuation reports were introduced as basic evidence upon which no conclusions had been drawn and for the purpose of the rate structure investigation, the commission's valuations are regarded as important.

H. B. Schaefer, rate expert for the Board of Railroad Commissioners of Montana, introduced an exhibit to show that the rate increases in Montana would be fundamentally wrong and that if railroads must have additional revenue they should revise rate structures. J. M. Hamilton, head of the department of economics at the Montana State College, stated that in 1920 there were 57,677 farms in Montana, and in 1925, 46,901, the reduction being due to the drought in 1919 and 1920.

The Missouri State Highway Commission entered its protest against increases through its representative, R. F. Campbell, superintendent of traffic, who contended that if the carriers proposed a blanket increase of 7½ cents a ton on road building materials it would take approximately $204,934 a year out of the highway commission's money which would be the equivalent of 52 miles of gravel road. The increase, he said, would especially affect the Missouri Highway Commission because Missouri is practically the only state that furnishes the contractor with all road building materials, with the exception of re-inforcing steel and bridge iron. He explained that all contracts made by the Missouri commission carried the provision that any advances in freight rates would be borne by the highway commission. He pointed out that the carriers had been benefited in the handling of road materials in Missouri, inasmuch as their open top equipment had been put to use in the summer months instead of being left empty on side tracks earning no revenue.

C. E. Spens, vice-president of the Chicago, Burlington & Quincy, and chairman of the carriers' committee on rate schedules, was placed on the stand at the request of J. V. Norman, Louisville, Ky., an attorney for the Southern Hardwood Association, who previously had asked the carriers to explain the rate proposals for logs in the southwest. Mr. Spens explained that the committee made no ruling to except logs in the southwest from the proposed 5 per cent increase. He was of the opinion that any order the Interstate Commerce Commission might make in the rate case would be permissive and not mandatory, that any rate increases could be disregarded in certain sections where competition forbade any disturbance of the rate structure. He indicated that the carriers recognized the fact that there were several instances throughout the western district in which the rate structure on certain rough products would require adjustments. When questioned by George T. Bell, an attorney for California lumber interests, upon the intention of the roads to get rate relief as soon as possible if the commission granted the increase, he stated that if the commission grants the relief the increased rates will be placed into effect immediately.

Lugano Station, Swiss Federal Railways

General News Department

The Cleveland Steam Railway Club will hold a meeting on February 1, at which the A. R. A. 1926 interchange rules will be discussed.

The Signal Section of the American Railway Association will hold its regular March meeting on Monday and Tuesday, the 8th and 9th, at the Drake Hotel, Chicago.

Robert S. Binkerd, vice-chairman of the Eastern Presidents' Public Relations Committee, will address the Railway Club of Pittsburgh on January 28 on "A Square Deal on Valuation and Earnings."

The Central of New Jersey has applied to the Interstate Commerce Commission for an extension of time to July 31, 1927, in which to comply with the commission's second automatic train control order of January 14, 1924.

One Inch is now the official minimum thickness of the filling in the pies which are served to passengers on the dining cars of the Pennsylvania Railroad, as appears from an announcement issued to the press on January 8.

The Canadian Railway Club at its next meeting, to be held at Montreal on February 9, will hear an address by R. A. C. Henry, director of the bureau of economics of the Canadian National, on the subject of autobus competition.

General chairmen of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, at a meeting in Cincinnati, Ohio, beginning January 18, considered proposals that wage increases of seven cents an hour be requested.

The Railroad Superintendents' Association of the St. Louis terminal district has elected for the ensuing year the following officers: President, Charles Burlingame, superintendent of the Terminal Railroad Association; vice-president, F. E. Hatch, terminal superintendent of the Illinois Central at East St. Louis; secretary, J. Rothschild, St. Louis, Mo.

Twenty-two baggage cars filled with silk, which arrived in New York City from Japan on January 13, were said to contain 10,000 bales valued at ten million dollars. This silk—two train-loads—was carried from Seattle, Wash., to New York City in 86 hours, and all the way from Yokahama to New York in 15 days. The movement was over the Chicago, Milwaukee & St. Paul and the New York Central.

Representatives of the Brotherhood of Railroad Trainman and the Brotherhood of Locomotive Engineers have filed a petition with the Public Service Commission of Kansas asking that a limit be set on the length of freight trains, on the ground that the longer trains have increased the hazard to trainmen. A statement issued by the brotherhoods alleges that injuries to trainmen have increased nearly 50 per cent in the past four years due largely, it is claimed, to the increased length of freight trains.

The Effect of the Diesel Electric Locomotive on Heavy Electrification

The Metropolitan sections of the American Institute of Electrical Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers and the American Institute of Mining and Metallurgical Engineers will hold a joint meeting in the Engineering Societies' building, 33 West Thirty-ninth street, New York, at 8 p. m. on February 18, to consider "The Effect of the Diesel-Electric Locomotive on Heavy Electrification." The principal speaker will be C. H. Stein, assistant to the senior vice-president of the Central of New Jersey; Hart Cooke of the McIntosh & Seymour Corporation, and N. W. Storer of the Westinghouse Electric Company.

New England Club to Hear Paper on International Congress

At the next meeting of the New England Railroad Club to be held in Boston on February 9, Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, will read a paper on "The International Railway Congress."

Chateau Frontenac Damaged by Fire

The Chateau Frontenac, the Canadian Pacific's famous hostelry at Quebec, suffered about $2,000,000 damage in a fire on January 14. The newer section of the structure was not affected and the hotel, restricted to the undamaged portion, was opened again to the public on January 18. Repairs to the damaged wing will be undertaken at once and it is expected that restoration will be complete by summer.

A Correction

In the article entitled "Causes and Prevention of Freight Car Derailments," which appeared on page 234 in the January 16 issue of the *Railway Age*, by T. H. Symington, the author was signed as president of The Symington Company, Baltimore, Md. This is incorrect, as Mr. Symington has not been connected with the company since the reorganization of the T. H. Symington Company as the present Symington Company in 1924. Mr. Symington's address is Baltimore, Md.

Locomotive Inspection

The Bureau of Locomotive Inspection of the Interstate Commerce Commission in 1925 inspected 43,188 locomotives, of which 18,144, or 42 per cent, were found defective and 1,742 were ordered out of service, according to the Interstate Commerce Commission's monthly report to Congress on the condition of railroad equipment. For the month of December the bureau inspected 5,926 locomotives, of which 2,503, or 42 per cent, were found defective and 230 were ordered out of service.

Two Roads Plan Highway Service

The Chicago & Alton will begin at once the operation of motor buses parallel to its railway line between St. Louis, Mo., and Jacksonville, Ill. Plans contemplate the purchase of two or more buses.

The Minnesota Western is reported to be planning the purchase of several motor buses to be used parallel to its railway line from Minneapolis, Minn., to Lake Minnetonka and Watertown.

H. M. Adams, vice-president in charge of traffic of the Union Pacific, has denied press reports from Salina, Kans., that the Union Pacific plans to operate motor trucks in Kansas in local freight service.

Transportation Fellowships at Yale

The Graduate School of Yale University, New Haven, Conn., offers five fellowships in transportation of $1,000 each annually, for advanced work in transportation, and applications will be received by the Dean of the school up to April 1. These are the Strathcona Memorial Fellowships, provided for by the will of Lord Strathcona, and preference is to be given to men who, for at least two years, have been connected with the railways of the Northwest, or the sons of such men. The Dean will supply application blanks. All phases of transportation are contemplated in the scheme of study, and upon completion of the survey of transportation, which is now being made on behalf of Yale University, the facilities of study may be amplified. Applicants must have taken a degree at an institution of high standing.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1925

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or less).	Net after rents.	Net after rents, 1924.
Akron, Canton & Youngstown	Nov.	171	$253,025	$320	$263,506	$52,397	$25,411	$10,407	$82,496	$13,930	$184,641	70.1	$78,865	$61,757	$22,798	$50,929
	11 mos.	171	2,792,462	4,958	2,923,544	437,714	277,384	122,069	795,245	134,419	1,760,636	60.2	1,162,908	1,001,214	597,535	601,753
Alabama & Vicksburg	Nov.	141	224,675	54,148	301,256	44,754	61,916	10,682	104,122	13,913	237,284	78.7	63,972	37,356	38,223	56,771
	11 mos.	141	2,414,111	622,753	3,288,155	473,365	534,711	112,807	1,051,474	156,590	2,343,325	71.3	944,830	615,681	676,237	474,331
Vicksburg, Shreveport & Pacific	Nov.	188	305,460	61,619	400,200	73,842	61,698	12,627	149,061	16,025	315,564	78.8	84,636	58,479	34,367	40,495
	11 mos.	188	3,168,267	698,973	4,135,276	676,668	658,598	132,983	1,484,423	171,994	3,148,269	76.1	987,007	695,201	551,893	432,086
Ann Arbor	Nov.	293	461,749	23,724	502,577	56,781	106,766	11,261	202,490	16,782	394,081	78.4	108,496	71,443	66,241	112,708
	11 mos.	293	4,863,788	289,768	5,357,081	575,694	1,061,759	115,957	2,089,342	181,935	4,024,737	75.1	1,332,344	1,097,293	970,338	614,056
Atchison, Topeka & Santa Fe	Nov.	9,187	14,609,272	2,847,537	18,798,931	1,812,008	2,997,700	360,522	5,046,654	345,234	10,492,147	55.8	8,306,784	6,504,091	6,680,823	4,946,599
	11 mos.	9,185	129,817,418	36,088,641	179,965,894	25,116,598	35,842,446	3,708,152	55,137,450	4,154,177	123,548,736	68.7	56,417,158	41,763,816	41,673,467	34,712,601
Gulf, Colorado & Santa Fe	Nov.	1,908	2,385,895	311,575	2,820,418	393,774	399,988	53,982	779,607	63,136	1,683,400	59.7	1,137,018	1,041,840	981,735	1,452,805
	11 mos.	1,908	22,032,766	3,056,960	26,459,084	5,142,913	5,187,407	546,820	8,185,012	721,477	19,760,561	74.7	6,698,523	5,712,565	4,455,572	5,109,071
Panhandle & Santa Fe	Nov.	858	1,042,687	128,168	1,236,396	75,559	205,561	10,590	319,675	20,482	622,266	50.3	614,130	531,612	485,958	556,309
	11 mos.	858	8,259,901	1,289,716	10,134,149	1,447,547	2,029,418	95,696	2,890,605	209,219	6,636,028	65.5	3,498,121	3,014,537	2,414,949	2,260,535
Atlanta & West Point	Nov.	93	178,004	72,896	289,130	33,517	41,158	10,354	96,315	10,344	196,937	68.1	92,193	75,179	57,782	25,071
	11 mos.	93	1,760,038	789,124	2,912,516	342,666	481,865	114,442	1,072,865	117,439	2,135,583	75.0	726,933	552,637	425,495	289,762
Western of Alabama	Nov.	133	195,476	70,205	295,608	27,803	48,481	11,762	90,750	10,760	194,319	65.7	101,289	79,605	72,772	55,982
	11 mos.	133	2,099,271	727,466	3,108,728	356,761	555,107	123,645	903,861	118,402	*2,107,824	67.8	1,000,904	806,377	761,752	572,800
Atlanta, Birmington & Atlantic	Nov.	639	407,795	46,813	493,172	97,578	115,070	24,909	177,944	16,849	432,401	87.6	60,771	48,049	10,854	12,597
	11 mos.	639	4,070,810	485,556	4,914,181	954,653	1,087,126	265,765	1,879,493	183,099	4,370,783	88.9	543,398	399,737	112,039	96,319
Atlantic Coast Line	Nov.	4,900	5,523,305	2,087,695	8,360,242	859,479	1,446,463	150,674	3,189,683	161,664	5,895,898	70.5	2,464,344	1,763,288	1,415,786	1,224,906
	11 mos.	4,888	58,593,157	19,562,086	84,730,574	9,827,403	15,979,715	1,555,307	28,929,249	1,705,085	58,591,543	69.2	26,139,031	20,125,122	18,410,850	13,304,781
Charleston & Western Carolina	Nov.	342	314,030	24,228	355,321	49,636	39,581	6,292	136,750	6,486	238,745	67.2	116,576	88,994	78,273	83,947
	11 mos.	342	3,303,834	285,255	3,757,459	616,060	479,494	79,050	1,453,073	72,278	2,699,677	71.9	1,057,782	829,341	699,898	483,053
Baltimore & Ohio	Nov.	5,292	17,052,917	2,122,205	20,564,069	2,250,847	4,205,672	367,561	7,634,242	511,841	15,152,996	73.7	5,411,073	4,643,162	3,982,228	2,893,364
	11 mos.	5,292	176,895,442	25,569,384	217,050,683	26,161,630	48,842,513	4,170,025	77,112,766	5,676,358	163,872,220	75.5	53,178,463	43,955,152	39,058,674	35,154,855
Baltimore & Ohio Chicago Term.	Nov.	80	.....	.....	304,345	42,081	39,278	2,070	155,458	11,062	254,325	83.6	50,020	7,193	93,098	128,696
	11 mos.	80	.....	.....	3,329,480	394,653	401,548	20,791	1,765,613	120,448	2,757,020	82.8	572,460	113,563	1,140,946	380,984
Staten Island Rapid Transit	Nov.	23	109,208	103,357	246,987	76,388	25,313	1,885	119,633	14,837	238,056	98.8	2,931	—11,069	—45,911	—36,362
	11 mos.	23	1,098,723	1,309,939	2,744,893	617,317	319,887	22,399	1,350,384	160,789	2,470,776	90.0	274,117	102,010	—159,222	—269,509
Bangor & Aroostook	Nov.	616	424,317	65,097	513,707	97,771	94,500	4,566	149,199	22,576	370,461	72.1	143,246	97,212	122,813	220,484
	11 mos.	616	5,432,229	607,725	6,314,084	1,167,884	1,259,894	52,275	1,721,408	247,984	4,469,002	70.8	1,845,082	1,318,910	1,624,443	1,598,869
Belt Ry. Co. of Chicago	Nov.	32	.....	.....	619,104	38,156	71,097	3,461	276,147	9,418	398,279	64.3	220,885	173,498	—182,402	134,314
	11 mos.	32	.....	.....	6,455,950	610,820	664,984	35,820	2,842,018	109,652	4,263,294	66.0	2,192,656	1,702,842	1,239,135	1,602,214
Bessemer & Lake Erie	Nov.	228	1,065,989	14,264	1,100,319	67,345	304,764	15,265	312,457	30,520	735,336	66.8	364,983	287,880	403,282	76,527
	11 mos.	228	14,234,932	202,714	14,685,346	1,029,138	3,866,357	162,989	3,767,796	337,197	9,162,133	62.4	5,523,213	4,737,439	5,218,498	2,753,564
Bingham & Garfield	Nov.	33	40,075	.....	41,520	10,542	8,662	1,536	10,858	4,235	35,990	86.7	5,530	—6,879	7,490	10,401
	11 mos.	33	542,385	587	566,666	103,714	105,119	15,667	139,458	52,253	418,208	75.1	138,458	18,200	160,093	128,711
Boston & Maine	Nov.	2,228	4,299,096	1,457,935	6,563,539	731,046	1,219,698	55,179	2,614,537	231,944	4,876,127	74.3	1,687,412	1,422,218	1,130,166	703,259
	11 mos.	2,247	45,838,029	18,139,257	72,891,093	9,181,761	14,485,183	723,738	29,443,488	2,609,674	56,697,237	77.8	16,193,856	13,333,623	10,644,573	7,846,533
Brooklyn Eastern District Term.	Nov.	9	118,456	.....	125,573	5,696	13,040	773	47,177	6,537	73,223	58.3	52,350	44,679	44,679	37,009
	11 mos.	9	1,260,166	.....	1,333,356	86,488	156,040	3,068	476,453	62,990	785,039	58.9	548,317	464,722	472,651	431,344
Buffalo & Susquehanna	Nov.	253	66,355	2,448	74,646	16,994	33,781	2,084	28,894	7,760	89,513	119.9	—14,867	—18,267	—10,167	30,587
	11 mos.	253	1,284,464	41,269	1,341,717	332,186	525,343	20,764	440,123	98,531	1,416,937	103.3	—45,220	—82,643	99,370	178,672
Buffalo, Rochester & Fittsburgh	Nov.	601	1,386,104	105,009	1,550,471	194,891	400,121	27,826	570,551	41,437	1,237,090	79.8	313,381	263,243	319,939	266,381
	11 mos.	601	12,994,932	1,315,790	15,050,730	1,955,229	4,146,853	297,350	5,673,113	450,701	12,546,658	83.4	2,504,072	2,073,570	2,285,802	2,312,552
Canadian Pacific Lines in Maine	Nov.	233	116,503	27,898	161,438	23,514	41,938	5,822	85,433	3,377	160,084	99.2	1,354	—3,646	—8,082	32,038
	11 mos.	233	1,512,495	328,449	2,000,348	644,474	458,904	55,494	936,739	42,054	2,137,665	106.9	—137,317	—252,317	—361,134	—182,263
Central of Georgia	Nov.	1,920	1,772,591	544,245	2,595,848	407,202	419,565	77,769	954,486	93,630	1,951,223	75.2	644,625	528,620	458,129	447,445
	11 mos.	1,920	19,594,008	5,483,493	27,525,336	4,313,773	4,759,176	798,612	9,981,730	1,017,616	20,818,133	75.6	6,707,203	5,459,454	4,884,091	4,174,455
Central of New Jersey	Nov.	690	3,031,346	669,198	4,028,135	446,444	929,707	34,231	1,616,337	97,615	3,145,171	78.1	882,964	488,361	388,694	1,256,572
	11 mos.	691	38,929,821	8,968,024	51,366,007	5,763,061	11,005,422	436,658	19,217,751	1,176,609	37,827,753	73.6	13,538,254	9,411,624	8,089,293	9,369,519
Central Vermont	Nov.	434	5,769,927	66,421	721,389	88,996	107,970	13,422	312,526	21,618	540,886	75.0	180,503	157,728	142,257	41,397
	11 mos.	434	5,886,016	1,187,365	7,843,065	1,690,806	1,281,061	162,093	3,506,146	249,702	6,894,709	87.9	948,356	734,085	542,101	558,689
Chesapeake & Ohio	Nov.	2,638	9,923,240	725,762	11,067,856	1,870,935	2,644,800	112,567	3,068,101	227,366	7,958,473	71.9	3,109,383	2,462,108	2,681,853	1,572,948
	11 mos.	2,613	98,798,762	8,824,020	112,436,176	17,829,150	28,436,450	1,183,782	31,544,724	2,440,698	31,759,014	72.7	30,677,162	25,102,232	27,646,817	20,390,915
Chicago & Alton	Nov.	1,055	1,982,427	519,031	2,751,432	368,784	598,560	63,028	964,865	54,385	2,045,667	74.3	705,765	569,513	447,455	178,102
	11 mos.	1,055	20,004,302	5,791,763	28,365,080	3,548,434	6,302,456	720,004	10,203,308	614,140	21,403,432	75.5	6,961,648	5,792,672	4,150,540	4,020,525
Chicago & Eastern Illinois	Nov.	945	1,807,814	352,941	2,358,896	221,842	658,550	77,656	851,734	69,696	1,397,177	80.4	461,719	324,959	300,431	53,640
	11 mos.	945	17,925,665	4,103,409	23,936,164	2,403,586	7,036,567	689,653	8,945,447	750,425	19,992,038	83.5	3,944,126	2,673,797	1,772,411	1,212,948
Chicago & North Western	Nov.	8,461	8,850,721	1,962,171	12,241,693	1,858,112	2,654,546	191,858	4,768,278	335,160	9,883,100	80.7	2,358,593	1,548,233	1,400,669	1,056,491
	11 mos.	8,461	96,887,562	24,430,928	136,313,927	19,424,586	28,009,620	2,011,069	52,121,372	3,759,621	106,078,679	77.8	30,235,248	21,394,563	19,754,607	15,528,645
Chicago, Burlington & Quincy	Nov.	9,400	10,580,306	1,945,009	13,738,617	1,761,528	2,776,892	244,927	4,748,057	362,217	9,959,024	72.5	3,779,593	2,802,003	2,469,523	2,139,779
	11 mos.	9,398	108,431,810	23,034,505	145,423,999	18,241,179	30,540,951	2,754,003	50,152,990	4,007,690	106,576,855	73.3	38,847,144	28,847,728	25,793,939	26,450,794
Chicago Great Western	Nov.	1,496	1,696,628	274,373	2,130,494	286,262	406,023	72,045	853,577	54,121	1,686,358	79.2	444,136	360,897	188,443	228,434
	11 mos.	1,496	17,304,037	3,298,672	22,434,171	3,252,335	4,510,716	807,082	8,925,118	604,133	18,245,786	81.3	4,188,385	3,292,504	1,836,795	2,000,668
Chicago, Indianapolis & Louisville	Nov.	649	1,098,145	213,812	1,448,264	142,628	386,612	32,437	528,532	31,966	1,136,516	78.5	311,748	251,269	160 678	161,217
	11 mos.	649	11,989,951	2,587,803	16,140,164	1,682,957	3,452,117	382,232	5,677,200	368,749	11,723,032	72.6	4,417,131	3,601,852	2,413,207	2,012,564

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1925—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or less).	Net after rents.	Net after rents, 1924.
Chicago, Milwaukee & St. Paul	Nov.	11,204	$10,764,965	$1,465,405	$13,602,977	$1,618,221	$3,336,295	$256,023	$5,146,986	$333,495	$10,754,406	79.1	$2,848,571	$2,134,025	$1,592,890	$2,465,405
	11 mos.	11,204	115,194,609	18,214,827	148,235,432	20,955,114	36,383,763	2,473,211	55,858,601	3,776,700	120,113,118	81.0	28,122,314	19,910,432	14,592,368	16,710,908
Chicago, Peoria & St. Louis	Nov.	215	66,582	6,698	80,643	15,936	23,428	1,032	42,007	7,017	89,420	110.9	—8,777	—11,162	—31,310	—32,477
	11 mos.	223	802,596	87,754	966,491	174,052	184,284	13,245	475,403	88,245	935,429	96.8	31,062	—881	—193,727	—221,666
Chicago River & Indiana	Nov.	19	.....	.....	571,502	70,462	73,023	1,041	223,310	13,589	381,425	66.7	190,077	148,974	266,948	282,920
	11 mos.	19	.....	.....	6,266,969	847,967	915,150	9,200	2,441,785	141,994	4,356,096	69.5	1,910,873	1,456,739	2,674,504	2,911,152
Chicago, Rock Island & Pacific	Nov.	7,561	7,737,246	1,827,848	10,469,334	1,335,130	2,915,114	245,834	3,856,834	292,876	7,941,979	75.9	2,527,355	1,943,812	1,635,246	1,770,051
	11 mos.	7,569	83,641,314	21,410,025	113,732,781	13,643,373	25,506,036	2,516,785	43,177,367	3,242,338	88,524,259	77.8	25,208,522	19,107,550	14,731,543	14,215,597
Chicago, Rock Island & Gulf	Nov.	458	477,166	70,792	599,423	54,573	60,020	17,635	238,864	18,272	388,353	64.8	210,570	171,080	162,141	239,781
	11 mos.	459	4,364,291	816,865	5,676,522	671,471	755,655	191,277	2,298,328	180,423	4,134,735	72.8	1,541,587	1,272,850	1,048,708	1,287,427
Chic., St. Paul, Minn. & Omaha	Nov.	1,749	1,668,880	339,653	2,160,539	265,147	414,309	30,093	960,023	72,887	1,748,828	80.9	411,711	255,620	227,415	372,110
	11 mos.	1,749	18,003,977	4,811,383	24,649,171	3,342,755	4,617,391	334,663	10,455,338	831,083	19,679,039	79.8	4,970,132	3,518,866	2,902,756	3,111,595
Cincinnati, Indianapolis & Western	Nov.	347	339,744	24,346	393,734	55,453	72,281	16,034	157,665	16,899	319,236	81.1	74,498	53,939	37,478	46,471
	11 mos.	347	3,750,962	327,835	4,389,421	601,954	885,127	173,843	1,773,571	192,597	3,637,383	82.9	751,538	545,097	253,837	248,881
Clinchfield Railroad	Nov.	309	718,457	25,255	756,421	76,313	187,859	22,350	140,662	19,868	446,014	59.0	310,407	220,400	343,570	283,413
	11 mos.	309	7,528,204	328,616	8,013,342	960,560	1,983,726	260,143	1,596,008	226,053	5,011,667	62.5	3,001,675	2,331,327	3,180,976	2,486,020
Colorado & Southern	Nov.	1,056	1,034,094	101,255	1,225,481	123,162	208,209	12,572	421,077	44,158	815,771	66.6	409,710	344,690	288,363	293,190
	11 mos.	1,056	8,814,641	1,480,683	11,246,053	1,554,273	2,437,202	154,709	4,195,379	458,652	8,877,050	78.9	2,369,003	1,661,308	1,460,193	1,629,164
Ft. Worth & Denver City	Nov.	491	918,105	219,394	1,204,424	67,198	169,258	12,724	314,031	39,408	608,081	50.5	596,343	539,039	523,736	584,265
	11 mos.	474	7,565,365	2,043,841	10,287,355	892,229	1,947,266	164,600	3,017,840	395,423	6,490,226	63.1	3,797,129	3,195,126	3,070,787	3,302,100
Wichita Valley	Nov.	271	188,104	28,021	226,371	20,504	8,262	.....	45,065	1,848	74,570	32.9	151,801	145,020	114,811	99,404
	11 mos.	271	1,209,237	245,899	1,553,441	227,672	94,242	378	461,091	19,585	780,501	50.8	762,940	668,285	436,096	526,007
Columbus & Greenville	Nov.	167	126,627	28,991	168,523	34,943	18,530	2,564	49,903	9,532	115,234	68.4	53,289	51,784	35,030	10,663
	11 mos.	167	1,184,967	270,482	1,550,347	450,277	188,437	29,873	559,079	108,795	1,333,722	86.0	216,625	196,803	54,760	44,551
Delaware & Hudson	Nov.	881	1,854,142	236,546	2,310,989	316,667	761,714	52,682	1,101,930	140,493	2,390,034	103.4	—79,045	—191,345	—212,516	605,514
	11 mos.	884	32,808,220	3,432,840	39,363,802	4,359,994	10,394,409	558,163	14,360,760	1,557,134	31,592,524	80.3	7,771,278	6,533,231	6,699,226	7,046,363
Delaware, Lackawanna & Western	Nov.	992	4,054,892	1,023,457	5,927,827	554,442	1,230,614	124,751	2,578,201	176,147	4,712,233	79.5	1,215,594	689,484	718,256	1,544,600
	11 mos.	992	55,780,145	12,528,173	77,570,517	7,697,693	16,025,795	1,366,194	30,003,711	1,819,736	57,465,245	74.1	20,105,272	13,628,335	14,077,597	14,789,446
Denver & Rio Grande Western	Nov.	2,556	2,754,969	300,895	3,283,189	464,461	662,848	52,100	1,012,123	84,507	2,314,015	70.5	969,174	743,993	674,165	547,551
	11 mos.	2,572	23,668,325	4,566,154	30,708,809	5,370,415	5,439,222	584,571	9,950,574	954,286	22,847,246	74.4	7,861,563	5,876,391	6,121,298	3,200,795
Denver & Salt Lake	Nov.	255	402,020	20,966	450,960	72,843	105,563	804	122,650	7,664	309,524	68.6	141,436	132,436	113,534	98,155
	11 mos.	255	2,836,683	273,811	3,409,721	808,836	1,005,952	17,116	896,540	71,253	2,799,697	82.1	610,024	510,793	497,358	101,778
Detroit & Machinac	Nov.	375	102,472	17,201	132,757	25,654	37,855	2,152	45,954	5,203	112,138	84.5	20,619	10,487	21,446	12,130
	11 mos.	375	1,200,698	231,119	1,585,924	335,584	410,029	22,773	594,914	60,857	1,416,238	89.3	169,686	58,403	182,321	279,469
Detroit & Toledo Shore Line	Nov.	61	430,181	.....	433,334	26,273	29,281	2,969	113,283	31,045	202,851	46.8	230,483	199,701	91,105	42,103
	11 mos.	61	3,754,466	.....	3,799,712	405,215	369,324	32,166	992,951	119,899	1,919,555	50.5	1,880,157	1,624,810	740,229	296,959
Detroit Terminal	Nov.	26	.....	.....	223,935	17,897	19,996	.....	123,360	3,344	164,597	73.5	59,338	12,222	22,019	30,594
	11 mos.	26	.....	.....	2,340,605	233,072	172,847	84	1,138,376	29,826	1,574,205	67.2	766,400	525,163	673,185	505,611
Detroit, Toledo & Ironton	Nov.	470	1,288,948	6,015	1,308,354	158,445	202,767	8,544	302,572	28,186	699,596	53.5	608,758	555,597	424,673	228,297
	11 mos.	470	12,449,543	76,487	12,677,744	1,928,879	2,052,002	92,741	3,275,291	311,257	7,640,220	60.3	5,037,524	4,503,842	3,341,001	2,522,597
Duluth & Iron Range	Nov.	277	280,301	6,026	331,334	57,927	103,744	1,222	142,737	19,112	325,032	98.1	6,302	—32,875	—28,991	—154,931
	11 mos.	276	5,902,766	70,530	6,735,737	1,007,894	1,258,121	13,074	1,867,936	211,412	4,362,050	64.8	2,373,687	1,887,742	1,917,019	525,139
Duluth, Missabe & Northern	Nov.	307	1,050,403	6,598	1,191,276	128,117	167,878	3,302	334,020	21,900	655,810	55.1	535,466	411,292	407,727	—244,659
	11 mos.	306	15,881,457	79,726	17,930,889	1,966,340	2,055,981	35,344	3,291,166	267,909	7,624,019	42.5	10,306,870	8,727,915	8,663,444	4,278,384
Duluth, Winnipeg & Pacific	Nov.	178	160,835	17,260	190,619	22,687	40,202	4,210	73,927	5,867	147,112	77.2	43,507	34,175	23,030	24,052
	11 mos.	178	1,794,262	162,667	2,044,871	359,481	428,284	49,008	786,577	81,974	1,718,086	84.0	326,785	225,192	246,680	208,059
Elgin, Joliet & Eastern	Nov.	459	1,855,012	13	2,029,064	166,150	438,487	12,453	686,907	47,807	1,351,202	66.6	677,862	516,199	357,363	331,169
	11 mos.	459	21,003,277	161	22,959,815	2,046,198	5,369,325	141,250	7,754,780	490,087	15,798,369	68.8	7,161,446	5,947,961	3,900,548	3,089,275
Erie R. R.	Nov.	2,055	6,485,043	943,353	8,223,971	763,193	2,171,376	141,281	3,429,622	276,573	6,826,900	83.0	1,397,071	1,145,471	1,020,756	1,551,082
	11 mos.	2,055	76,605,370	11,997,707	96,728,368	11,127,071	24,181,810	1,621,477	37,679,016	3,178,757	78,226,352	80.9	18,502,016	14,594,478	14,921,384	14,670,156
Chicago & Erie	Nov.	269	991,530	51,735	1,148,213	129,561	144,776	22,525	380,625	39,616	717,326	62.5	430,887	365,771	9,367	—1,310
	11 mos.	269	11,212,087	668,896	12,928,628	1,470,340	1,572,854	254,501	4,132,838	429,765	7,846,953	60.7	5,081,675	4,458,554	1,342,634	1,006,915
New Jersey & New York	Nov.	45	26,432	98,040	130,364	11,544	22,793	1,534	73,033	3,736	112,640	86.4	17,724	14,884	—16,922	—9,331
	11 mos.	45	285,738	1,160,070	1,502,436	194,239	247,286	16,226	780,867	45,620	1,284,230	85.5	218,206	179,404	—171,038	—106,665
N. Y., Susquehanna & Western	Nov.	135	211,117	49,778	301,664	43,492	70,954	4,666	184,500	11,539	315,142	104.5	—13,478	—42,378	—54,421	47,133
	11 mos.	135	3,486,372	623,985	4,585,137	548,675	679,751	46,296	2,248,438	127,673	3,650,607	79.6	934,530	614,609	423,516	—34,577
Evansville, Indian'p's & Terre Haute	Nov.	146	202,047	5,168	214,131	35,812	28,565	1,572	70,027	4,238	140,214	65.5	73,917	66,222	35,249	120,049
	11 mos.	146	2,097,430	48,155	2,220,763	344,382	357,644	20,315	734,134	47,727	1,503,867	67.7	716,896	646,795	346,396	123,278
Florida East Coast	Nov.	804	1,386,855	955,999	2,634,396	368,702	392,585	25,054	1,085,399	47,425	1,950,377	74.0	684,019	526,488	276,576	363,869
	11 mos.	773	14,583,446	8,711,703	26,088,514	3,712,137	3,478,217	225,809	9,737,533	452,731	17,617,920	67.5	8,470,594	7,075,837	4,990,527	4,007,880
Fort Smith & Western	Nov.	249	179,788	18,554	207,498	26,544	33,141	5,130	52,834	7,532	125,669	60.5	82,029	76,526	64,434	64,216
	11 mos.	249	1,428,951	189,141	1,717,798	270,856	305,094	57,634	516,461	83,041	1,236,627	72.0	481,171	419,619	272,646	192,458
Galveston Wharf Co	Nov.	13	.....	.....	136,377	44,848	3,403	867	36,187	3,633	91,975	67.4	44,402	22,902	22,905	101,006
	11 mos.	13	.....	.....	1,440,608	540,055	43,870	10,653	373,813	30,594	1,061,370	73.7	379,238	167,660	166,633	268,448
Georgia R. R.	Nov.	328	401,355	83,196	522,693	74,993	92,493	23,242	226,512	22,588	439,462	84.1	83,231	76,186	75,173	87,254
	11 mos.	328	4,175,093	972,253	5,543,448	677,192	1,069,846	254,382	2,286,997	227,784	4,508,323	81.3	1,035,125	950,420	914,011	766,935
Georgia & Florida	Nov.	406	173,191	25,436	209,662	28,207	20,973	8,350	70,311	8,942	137,012	65.3	72,650	65,524	45,163	16,213
	11 mos.	406	1,412,898	211,569	1,712,597	228,246	193,470	87,708	617,844	86,094	1,215,790	71.0	496,807	424,114	238,024	193,059

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1925—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or less).	Net after rents.	Net after rents, 1924.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.					
Grand Trunk Western	Nov.	347	$1,402,122	$169,358	$1,664,790	$234,853	$378,588	$36,007	$554,963	$52,752	$1,267,147	76.1	$397,643	$342,698	$170,106	—$34,284
	11 mos.	347	14,002,051	2,025,140	16,998,145	2,103,983	4,141,513	416,192	5,996,287	591,376	13,350,030	78.5	3,648,115	2,930,080	1,621,571	138,647
Atlantic & St. Lawrence	Nov.	166	128,366	23,935	166,592	30,157	33,597	5,598	93,779	11,406	175,529	105.3	—8,937	—23,688	—64,184	—37,685
	11 mos.	166	1,646,216	336,852	2,158,886	519,420	375,671	65,439	1,152,063	91,046	2,219,508	102.8	—60,622	—245,581	—861,806	—1,165,952
Chic., Det. & Canada Gr. Tr. Jct.	Nov.	59	221,031	5,146	278,219	30,110	11,335	4,163	97,070	3,716	146,381	52.6	131,838	125,469	94,117	45,283
	11 mos.	59	2,409,552	46,846	2,922,972	355,226	128,593	45,835	937,834	38,939	1,506,299	51.5	1,416,673	1,310,838	976,548	772,134
Det., Grand Haven & Milwaukee	Nov.	189	525,154	31,946	670,985	62,039	42,323	11,038	268,594	14,647	398,461	64.2	222,524	216,919	125,279	—39,973
	11 mos.	189	5,558,454	365,339	6,514,247	786,462	519,999	124,347	2,729,267	182,826	4,343,078	66.7	2,171,169	2,121,560	1,044,439	344,550
Great Northern	Nov.	8,224	9,317,300	1,083,799	11,328,611	804,262	1,340,787	209,833	3,587,913	206,889	6,195,807	54.7	5,132,804	4,239,325	4,102,893	4,581,884
	11 mos.	8,243	83,227,534	12,762,431	105,987,541	13,544,767	15,735,449	2,148,345	35,271,634	2,453,078	69,921,001	66.0	36,066,540	27,071,586	26,078,012	22,493,854
Green Bay & Western	Nov.	234	132,430	4,786	143,524	23,606	17,117	4,747	49,220	3,320	97,989	68.2	45,535	35,535	32,985	17,550
	11 mos.	234	1,279,748	80,021	1,434,903	278,927	183,364	47,673	500,819	30,891	1,041,109	72.5	393,794	303,000	236,800	169,834
Gulf & Ship Island	Nov.	307	272,560	39,794	334,567	74,768	31,283	4,615	130,111	8,031	251,264	75.1	83,303	45,634	—25,375	47,917
	11 mos.	307	2,700,455	444,918	3,430,672	641,538	544,144	76,361	1,062,901	141,698	2,552,442	74.4	878,230	549,346	324,479	575,584
Gulf, Mobile & Northern	Nov.	466	524,238	37,488	586,345	78,577	65,386	27,067	176,810	21,081	369,436	63.0	216,909	161,614	151,233	107,927
	11 mos.	466	5,209,813	361,963	5,802,002	841,855	899,979	261,402	1,684,935	263,804	3,957,064	68.2	1,844,938	1,396,204	1,298,193	1,131,060
Hocking Valley	Nov.	348	1,577,039	74,327	1,824,754	146,602	417,591	14,547	574,136	39,697	1,191,919	65.3	632,835	537,424	452,162	195,860
	11 mos.	348	15,646,185	744,232	18,040,886	2,364,590	4,939,181	159,684	5,278,406	433,883	13,161,634	73.0	4,879,252	3,792,592	3,249,372	3,257,963
Illinois Central	Nov.	4,874	10,591,551	2,043,942	13,590,989	1,995,895	3,053,218	247,665	4,604,177	323,204	10,299,056	75.8	3,291,933	3,523,227	2,589,576	1,541,009
	11 mos.	4,874	106,898,757	22,379,161	139,831,776	20,757,152	31,382,520	2,432,323	48,945,038	3,540,153	107,446,710	76.8	32,385,066	22,365,001	22,837,478	21,694,749
Yazoo & Mississippi Valley	Nov.	1,280	1,820,406	313,791	2,256,959	351,902	392,627	30,645	730,395	47,743	1,550,674	68.7	706,285	469,941	429,450	683,812
	11 mos.	1,380	17,992,785	3,052,346	22,225,815	3,389,319	3,861,141	323,316	7,795,628	527,327	15,856,076	71.3	6,369,739	4,855,713	4,367,328	3,853,998
Illinois Central Combined Report	Nov.	6,254	12,411,957	2,357,733	15,847,948	2,347,797	3,445,845	278,310	5,334,572	370,947	11,849,730	74.8	3,998,218	2,993,168	3,019,026	2,224,821
	11 mos.	6,255	124,891,542	25,431,507	162,057,591	24,146,471	35,243,661	2,755,639	56,740,666	4,067,480	123,302,786	76.1	38,754,805	27,220,714	27,204,806	25,548,747
Kansas City, Mexico & Orient	Nov.	272	159,104	9,296	177,776	42,677	38,249	7,792	65,418	11,736	165,872	93.3	11,904	7,900	2,085	5,754
	11 mos.	272	2,107,267	89,726	2,283,704	441,574	555,531	62,649	793,420	185,884	2,038,387	89.3	245,317	172,381	2,486	—34,406
Kans. City, Mex. & Orient of Tex.	Nov.	465	232,839	17,486	260,982	46,321	54,121	7,790	98,017	12,798	219,047	83.9	41,935	34,927	8,261	57,178
	11 mos.	465	2,682,724	162,109	2,948,939	590,519	635,307	68,508	990,038	75,661	2,359,630	80.0	589,309	511,892	271,848	161,030
Kansas City Southern	Nov.	784	1,285,771	124,837	1,571,641	225,700	264,539	48,847	472,688	77,291	1,084,362	69.0	487,279	377,611	336,777	336,526
	11 mos.	777	13,622,491	1,452,970	16,686,754	2,296,723	2,939,271	502,782	5,280,905	839,150	11,839,983	71.0	4,846,771	3,777,550	3,427,748	2,876,602
Texarkana & Ft. Smith	Nov.	81	209,413	12,073	236,832	27,810	25,340	6,300	66,181	10,282	136,863	57.8	99,969	84,049	57,122	62,477
	11 mos.	81	2,376,991	125,213	2,692,866	311,595	250,811	65,880	767,309	109,866	1,520,419	56.5	1,172,447	997,590	702,327	805,700
Kansas, Oklahoma & Gulf	Nov.	314	256,695	7,351	269,627	64,866	31,641	9,934	89,929	8,681	204,130	75.7	65,497	56,569	42,576	27,162
	11 mos.	314	2,126,405	81,203	2,266,955	647,828	366,607	98,229	846,342	102,748	2,059,861	90.9	207,094	114,365	—14,340	30,908
Lake Superior & Ishpeming	Nov.	161	185,461	2,795	215,856	26,851	25,358	436	57,531	4,651	114,747	53.2	101,109	67,186	66,381	11,918
	11 mos.	161	1,892,924	35,428	2,194,893	388,676	275,040	5,248	552,737	55,400	1,276,687	58.2	918,206	709,618	677,054	322,251
Lake Terminal	Nov.	13	.....	.....	86,309	13,305	16,505	.....	56,508	1,886	88,204	102.2	—1,895	—19,067	—20,674	—11,953
	11 mos.	13	.....	.....	1,095,432	170,418	198,754	.....	625,721	19,162	1,014,055	92.6	81,377	3,879	23,959	—107,417
Lehigh & Hudson River	Nov.	96	206,080	2,194	241,705	30,969	35,079	2,156	104,998	9,176	182,378	75.5	59,327	50,414	27,175	21,897
	11 mos.	96	2,663,219	30,573	2,847,023	350,340	475,950	23,101	1,082,295	107,678	2,039,346	71.6	807,677	663,026	396,311	424,894
Lehigh & New England	Nov.	219	299,366	1,222	306,672	51,800	87,081	5,042	129,258	17,642	290,611	94.8	16,061	13,499	4,549	135,269
	11 mos.	219	4,945,234	15,768	5,048,689	705,198	1,156,744	60,431	1,599,346	200,893	3,719,288	73.7	1,329,401	1,141,887	1,131,573	1,168,104
Lehigh Valley	Nov.	1,363	4,155,884	582,097	5,143,249	704,857	1,224,077	127,293	2,352,893	134,524	4,572,816	88.9	570,433	486,758	374,120	634,520
	11 mos.	1,370	56,844,188	7,381,126	69,424,726	8,081,232	14,703,960	1,370,199	27,034,856	1,596,713	53,111,591	76.5	16,313,135	12,749,309	11,912,792	10,511,653
Louisiana & Arkansas	Nov.	302	283,734	20,941	311,699	52,811	54,923	10,421	91,443	14,769	223,440	71.7	88,259	62,227	51,318	25,994
	11 mos.	302	3,395,799	238,009	3,731,644	590,994	647,965	116,648	1,003,228	149,877	2,502,183	67.1	1,229,461	887,986	762,612	561,349
Louisiana Ry. & Nav. Co.	Nov.	337	307,476	22,614	349,256	85,650	60,963	13,096	123,692	10,185	291,903	83.5	57,253	37,158	—5,879	—41,426
	11 mos.	337	3,094,935	210,774	3,503,085	779,569	532,915	130,910	1,388,132	111,749	2,918,834	83.3	584,251	362,320	12,815	—183,939
Louisiana Ry. & Nav. Co. of Tex.	Nov.	206	109,532	8,106	123,613	17,015	15,375	4,708	50,595	5,299	92,921	75.2	30,692	26,578	7,637	4,908
	11 mos.	206	1,059,295	93,249	1,218,231	201,873	167,968	34,249	546,344	62,051	1,011,796	83.0	206,435	162,366	—26,274	—46,929
Louisville & Nashville	Nov.	5,044	9,798,870	1,802,580	12,356,130	1,667,698	2,664,564	241,896	4,184,280	252,294	9,075,463	73.4	3,280,667	2,620,578	2,554,965	1,835,204
	11 mos.	5,044	101,236,425	20,719,313	129,666,403	18,838,044	29,471,404	2,590,610	44,462,553	3,057,587	98,923,748	76.3	30,742,655	24,436,666	24,711,529	19,722,707
Louisville, Henderson & St. Louis	Nov.	199	248,570	52,203	318,918	57,186	45,308	6,857	95,037	9,093	213,481	66.9	105,437	81,016	76,423	48,840
	11 mos.	199	2,671,950	606,751	3,483,715	680,665	455,185	80,016	1,066,823	105,507	2,388,196	68.6	1,095,519	870,788	748,763	447,783
Maine Central	Nov.	1,154	1,175,671	259,954	1,572,496	179,726	300,149	12,501	653,211	47,896	1,193,213	75.9	379,283	278,367	257,486	212,673
	11 mos.	1,202	13,149,600	3,588,680	18,463,323	2,799,950	3,596,328	154,954	7,315,140	539,347	14,423,091	78.1	4,040,232	2,933,177	2,839,232	2,204,243
Midland Valley	Nov.	364	302,988	37,106	354,812	43,889	45,351	6,365	95,205	17,952	206,573	58.2	148,239	128,416	112,445	98,551
	11 mos.	364	3,438,796	440,707	4,037,521	654,263	499,614	69,309	1,132,419	206,017	2,542,708	63.0	1,494,813	1,303,167	1,112,294	1,084,563
Minneapolis & St. Louis	Nov.	1,627	1,092,994	95,784	1,256,134	95,538	246,669	34,258	541,926	44,512	964,594	76.8	291,540	230,945	182,786	48,671
	11 mos.	1,635	11,900,118	1,128,791	13,759,341	2,335,973	2,954,260	352,448	6,000,605	520,540	12,158,518	88.4	1,600,823	897,333	223,238	—996,519
Minn., St. Paul & S. S. Marie	Nov	4,400	3,898,681	438,887	4,669,085	509,125	758,094	65,081	1,556,992	109,815	3,007,246	64.4	1,661,839	1,381,477	1,220,023	1,671,635
	11 mos.	4,401	36,407,115	5,792,806	45,834,739	6,060,382	8,110,556	777,615	16,853,975	1,228,485	33,247,765	72.5	12,586,974	9,644,034	8,370,803	6,530,442
Duluth, South Shore & Atlantic	Nov.	590	342,732	78,232	464,265	48,694	74,706	6,361	194,944	12,154	342,155	73.7	122,110	94,110	71,364	17,955
	11 mos.	590	4,019,907	899,327	5,418,578	931,389	875,254	75,812	2,174,789	125,929	4,241,386	78.3	1,177,192	863,058	633,448	462,144

Illinois, North Shore & Milwaukee	Nov.	590	4,019,907	899,327	5,418,578	931,389	875,254	75,812	2,174,789	125,929	4,241,386	78.3	1,177,192	863,058	633,448	462,144
	11 mos.	590	4,019,907	899,327	5,418,578	931,389	875,254	75,812	2,174,789	125,929	4,241,386	78.3	1,177,192	863,058	633,448	462,144

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1925—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or less).	Net after rents.	Net after rents, 1924.
Spokane International	Nov.	165	$86,836	$14,051	$107,698	$17,269	$10,327	$3,218	$32,425	$6,634	$70,844	65.8	$36,854	$31,109	$22,139	$11,858
	11 mos.	165	940,249	141,979	1,151,611	180,368	101,288	35,328	373,503	72,309	773,714	67.2	377,897	319,095	231,428	110,975
Mississippi Central	Nov.	164	117,624	12,368	135,638	19,982	20,362	6,833	35,284	7,668	90,090	66.4	45,548	33,830	40,936	28,053
	11 mos.	172	1,318,902	133,864	1,506,535	209,011	250,380	78,026	405,278	91,319	1,033,691	68.6	472,844	341,808	405,030	445,422
Missouri & North Arkansas	Nov.	364	103,695	16,406	129,470	34,376	25,888	5,168	51,924	6,769	124,125	95.9	5,345	2,911	—7,833	17,475
	11 mos.	364	1,133,567	187,278	1,420,511	326,173	258,899	59,494	555,741	79,851	1,279,269	90.1	141,242	117,266	3,083	60,950
Missouri-Kansas-Texas	Nov.	1,799	2,514,139	399,201	3,166,492	354,196	958,017	60,461	773,848	89,437	2,246,391	70.9	920,101	741,764	762,322	871,236
	11 mos.	1,799	25,495,730	4,435,585	32,282,136	3,453,209	7,356,507	599,859	8,243,153	1,001,334	20,755,353	64.3	11,526,783	9,535,580	9,576,387	8,009,725
Mo., Kansas, Texas of Texas	Nov.	1,389	1,549,817	380,821	2,083,097	285,694	81,448	47,426	783,630	63,752	1,268,518	60.9	814,579	755,640	590,221	523,256
	11 mos.	1,389	14,355,901	4,028,269	19,997,517	3,325,379	3,017,503	475,895	7,736,603	729,582	15,298,249	76.6	4,699,268	4,037,132	1,987,031	3,218,361
Missouri Pacific	Nov.	7,337	9,060,155	1,354,841	11,248,502	1,759,349	2,072,975	220,390	3,978,416	307,354	8,398,411	74.7	2,850,091	2,317,811	1,909,822	1,784,254
	11 mos.	7,337	95,388,972	15,119,137	119,562,929	18,636,792	23,664,695	2,801,905	44,151,953	3,588,349	93,448,687	78.2	26,114,242	21,308,261	16,459,610	14,378,035
Gulf Coast Lines	Nov	922	909,371	159,016	1,137,535	205,894	266,557	45,931	328,711	57,946	915,416	80.4	222,119	162,878	139,169	224,258
	11 mos.	922	10,998,111	1,840,688	13,639,558	2,106,277	2,127,902	406,048	3,783,123	555,075	8,947,591	65.6	4,691,967	4,016,937	3,690,539	3,888,288
International-Great Northern	Nov.	1,159	1,112,984	199,731	1,463,279	198,118	221,944	32,598	614,505	53,008	1,108,360	75.75	354,919	317,764	239,699	338,164
	11 mos.	1,159	11,982,005	2,050,480	15,497,324	2,881,222	2,581,332	378,947	6,033,041	625,528	12,285,937	79.28	3,211,387	2,809,513	2,084,033	2,246,195
Texas & Pacific	Nov.	1,953	2,575,473	542,929	3,355,295	471,920	616,389	66,314	1,122,871	91,268	2,367,253	70.6	988,042	789,397	655,010	890,907
	11 mos.	1,952	23,374,325	5,924,794	31,661,137	4,677,126	6,257,079	699,703	11,214,184	1,031,918	23,870,050	75.4	7,791,087	6,078,004	5,252,973	5,007,457
Mobile & Ohio	Nov.	1,161	1,438,005	124,958	1,651,361	292,988	265,221	59,542	569,687	48,005	1,234,493	74.8	416,868	310,451	243,120	231,146
	11 mos.	1,161	15,192,293	1,457,427	17,611,926	2,550,297	3,026,982	553,150	6,059,595	499,259	12,687,263	72.0	4,924,663	3,859,910	3,337,753	3,325,259
Monongahela	Nov.	129	563,211	23,825	592,523	44,000	55,000	958	168,164	9,202	276,521	46.7	316,002	285,496	200,974	158,319
	11 mos.	130	5,034,849	258,098	5,343,673	637,500	665,000	12,366	1,387,377	105,686	2,802,339	52.4	2,541,334	2,287,887	1,587,743	934,550
Monongahela Connecting	Nov.	7	.....	.....	180,386	20,944	37,767	375	90,159	2,761	152,006	84.3	28,380	23,992	21,066	—4,628
	11 mos.	7	.....	.....	1,970,068	230,571	436,993	4,142	963,202	35,470	1,670,378	84.8	299,690	244,453	229,651	—11,130
Montour	Nov.	57	37,316	200	38,160	12,191	29,035	901	14,107	7,071	63,368	166.1	—25,208	—26,860	3,610	48,462
	11 mos.	57	829,821	5,578	847,085	216,607	392,527	10,279	217,289	79,077	915,779	108.1	—68,694	—112,260	220,727	519,743
Nashville, Chatt. & St. Louis	Nov.	1,259	1,492,632	396,084	2,068,220	253,749	435,775	83,519	724,138	71,099	1,593,078	77.0	475,142	397,385	370,889	283,348
	11 mos.	1,259	15,869,302	4,397,005	21,961,738	3,276,044	4,799,909	851,745	7,832,531	784,100	17,655,398	80.4	4,306,340	3,582,007	3,463,839	3,033,732
Nevada Northern	Nov.	165	65,153	7,815	80,085	19,180	9,301	1,007	16,858	5,824	52,328	65.3	27,757	18,521	18,487	2,087
	11 mos.	165	782,437	97,705	955,286	200,670	82,197	10,525	183,666	62,002	540,435	56.5	414,851	297,351	301,614	396,813
Newburgh & South Shore	Nov.	7	.....	.....	191,044	13,344	37,168	.....	71,769	4,017	126,298	66.1	64,746	50,608	74,796	22,126
	11 mos.	7	.....	.....	1,884,943	238,878	427,655	.....	738,652	47,943	1,453,128	77.1	431,815	285,606	351,243	134,386
New Orleans Great Northern	Nov.	274	209,657	25,926	243,365	34,346	43,504	6,388	70,118	10,402	164,764	67.7	78,601	63,547	58,333	43,600
	11 mos.	274	2,252,600	303,506	2,649,310	384,990	467,047	70,824	801,027	115,943	1,839,975	69.5	809,335	607,854	509,868	484,046
New York Central	Nov.	6,922	21,478,092	7,225,853	33,064,755	4,726,502	7,445,221	368,302	11,699,328	951,243	25,624,954	77.6	7,379,801	5,396,366	5,525,981	4,922,564
	11 mos.	6,922	219,776,599	88,349,014	352,864,172	47,494,776	73,467,554	4,156,088	122,195,639	11,591,469	263,472,299	74.7	89,391,873	65,668,714	63,713,839	59,432,338
Cincinnati Northern	Nov.	244	400,028	6,555	416,836	68,065	70,647	5,351	136,618	14,130	294,811	70.7	122,025	98,608	67,839	81,092
	11 mos.	244	4,116,355	93,331	4,309,710	526,795	708,415	67,314	1,349,023	121,322	2,771,125	64.3	1,538,585	1,258,672	918,018	814,959
Cleve., Cin., Chic. & St. Louis	Nov.	2,398	6,036,596	1,267,952	7,926,795	1,006,925	1,510,626	125,874	2,879,966	295,688	5,883,567	74.2	2,043,228	1,604,425	1,660,853	1,062,856
	11 mos.	2,398	62,184,678	14,854,595	83,919,095	10,353,079	16,629,389	1,428,165	29,676,324	2,511,759	61,307,809	73.1	22,611,286	17,572,691	16,708,308	12,803,474
Indiana Harbor Belt	Nov.	116	.....	.....	985,714	121,298	114,723	4,380	393,487	37,285	671,020	68.0	314,694	275,040	152,710	48,632
	11 mos.	116	.....	.....	10,335,663	1,205,219	1,286,120	52,244	4,109,502	271,941	6,922,274	67.0	3,413,389	2,945,153	1,796,301	806,046
Michigan Central	Nov.	1,862	5,266,395	1,584,171	7,679,702	736,681	1,497,395	112,920	2,496,252	311,172	5,228,621	68.1	2,451,081	1,969,447	1,927,199	1,155,800
	11 mos.	1,862	56,868,218	18,965,352	84,114,993	9,811,070	15,946,833	1,193,576	26,750,886	2,053,012	56,608,722	67.3	27,506,271	22,153,177	21,952,765	17,599,041
Pittsburgh & Lake Erie	Nov.	231	2,281,614	240,662	2,633,567	366,275	784,101	20,622	856,936	84,951	2,112,721	80.2	520,846	334,400	782,166	703,108
	11 mos.	231	25,430,267	2,740,989	29,222,714	4,140,295	8,876,057	256,965	9,401,243	825,215	23,496,567	80.4	5,726,147	3,757,480	7,845,108	7,422,647
New York, Chicago & St. Louis	Nov.	1,695	4,229,474	135,428	4,528,092	663,015	891,096	120,293	1,629,130	135,351	3,437,935	75.9	1,090,157	825,498	763,149	1,101,305
	11 mos	1,695	46,469,051	1,785,748	50,017,924	6,665,304	9,194,286	1,334,860	17,403,523	1,707,792	36,067,704	72.1	13,950,220	11,194,914	9,813,826	8,627,291
New York, New Haven & Hartford	Nov.	1,918	5,867,347	4,076,025	11,255,490	1,312,459	2,145,092	73,886	3,952,522	301,866	7,967,862	70.8	3,287,628	2,852,708	2,228,931	2,075,089
	11 mos.	1,936	62,224,291	45,361,950	121,019,678	15,715,848	25,224,997	837,172	42,590,892	3,215,824	89,366,897	73.8	31,652,781	27,095,075	21,327,108	17,871,481
Central New England	Nov.	285	575,443	4,599	597,670	105,307	149,335	8,226	203,844	16,025	482,737	80.8	114,933	89,895	55,721	224,120
	11 mos.	288	6,559,935	88,774	6,865,606	1,342,857	1,294,422	69,597	2,210,412	168,861	5,086,132	74.1	1,779,474	1,505,793	1,087,703	1,525,872
New York Connecting	Nov.	20	247,302	.....	280,296	22,528	15,099	.....	54,172	1,367	93,166	33.2	187,130	152,130	150,470	109,898
	11 mos.	20	2,222,721	.....	2,528,969	220,674	139,653	.....	549,965	15,121	925,413	36.6	1,603,556	1,178,956	1,132,434	1,098,563
New York, Ontario & Western	Nov.	569	271,630	72,533	521,869	122,290	141,054	16,496	354,039	31,948	672,989	128.9	—151,120	—169,168	—171,829	93,160
	11 mos.	569	7,022,777	2,626,552	11,733,201	1,763,061	2,185,850	182,339	5,047,103	386,363	9,627,770	82.1	2,105,431	1,692,222	1,288,283	1,612,042
Norfolk & Western	Nov.	2,241	8,574,972	609,061	9,495,793	1,350,474	1,658,196	100,925	2,458,748	169,493	5,714,621	60.2	3,781,172	2,704,675	3,062,703	2,954,427
	11 mos.	2,240	85,096,276	7,308,542	95,885,772	13,715,361	19,998,130	1,092,549	25,674,708	1,912,572	62,159,549	64.8	33,726,223	26,072,819	28,532,043	17,836,917
Norfolk Southern	Nov.	931	686,715	68,123	800,791	103,250	109,778	23,274	293,178	25,595	555,075	69.3	245,716	200,064	166,273	120,757
	11 mos.	931	6,936,678	920,261	8,335,816	1,118,773	1,213,532	256,749	3,249,413	309,910	6,149,817	73.8	2,185,999	1,686,927	1,329,595	1,280,319

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1925—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or less).	Net after rents.	Net after rents, 1924.
Northern Pacific	Nov.	6,683	$7,825,856	$913,042	$9,434,184	$692,639	$1,507,275	$139,042	$2,927,326	$225,895	$5,545,503	58.8	$3,888,681	$2,933,977	$3,283,521	$3,159,797
	11 mos.	6,694	70,028,450	12,107,972	89,702,543	12,271,954	15,991,978	1,922,870	30,794,484	2,724,094	64,644,409	72.1	25,058,134	16,608,732	19,967,816	17,485,363
Northwestern Pacific	Nov.	493	326,223	144,046	519,978	108,027	76,688	6,168	211,526	17,686	420,037	80.8	99,941	58,903	39,103	27,141
	11 mos.	491	3,995,234	1,962,770	6,558,116	1,089,189	878,351	73,816	2,544,712	193,379	4,777,300	72.8	1,780,816	1,298,304	1,149,015	1,238,542
Pennsylvania Railroad	Nov.	10,500	40,492,013	11,311,562	57,233,580	7,388,465	13,381,912	707,346	21,574,324	1,478,866	45,304,516	79.2	11,929,064	9,310,001	8,496,800	4,139,078
	11 mos.	10,500	425,235,332	132,727,769	614,302,789	76,994,155	147,551,099	7,440,639	223,795,319	16,600,444	480,166,308	78.2	134,136,481	103,878,092	91,905,672	73,164,983
Baltimore, Ches. & Atlantic	Nov.	130	69,394	27,846	102,934	13,605	21,212	1,506	74,150	3,162	113,635	110.4	—10,701	—10,722	—11,005	—14,811
	11 mos.	130	908,627	407,086	1,396,733	148,117	327,313	22,427	878,226	37,736	1,413,819	101.2	—17,086	—49,413	—49,709	9,457
Long Island	Nov.	397	900,985	1,724,520	2,747,848	496,543	501,338	26,849	1,057,689	70,302	2,161,145	78.6	586,703	461,770	456,979	300,113
	11 mos.	397	9,843,631	22,392,293	34,211,088	4,855,968	5,558,504	268,614	13,033,141	773,551	24,592,396	71.9	9,618,692	7,586,273	6,440,330	4,477,754
West Jersey & Seashore	Nov.	368	392,127	390,149	836,833	228,457	171,709	5,367	428,694	24,969	858,648	102.6	—21,815	—21,907	—48,283	—20,083
	11 mos.	368	4,515,340	7,397,139	12,625,395	2,043,576	2,059,808	217,409	5,398,785	318,983	10,046,781	79.6	2,578,614	1,475,960	1,153,928	876,620
Peoria & Pekin Union	Nov.	19	22,845	2,546	156,921	15,650	12,414	948	69,776	7,557	106,345	67.8	50,576	22,576	54,373	11,148
	11 mos.	19	272,379	30,319	1,704,797	287,922	173,203	9,508	742,596	86,813	1,300,042	76.3	404,755	194,755	459,529	412,111
Pere Marquette	Nov.	2,263	3,481,729	257,774	3,994,675	432,039	798,704	50,835	1,327,975	100,027	2,700,509	67.6	1,294,166	1,101,525	936,047	588,589
	11 mos.	2,263	32,355,374	3,925,731	38,941,399	4,513,829	8,293,437	585,236	13,573,220	1,104,763	28,074,096	72.1	10,867,303	8,971,816	7,959,539	6,698,001
Pittsburgh & Shawmut	Nov.	102	120,317	3,472	126,402	14,265	31,257	1,287	35,786	6,285	88,880	70.3	37,522	37,396	47,837	23,644
	11 mos.	102	1,115,128	42,404	1,182,461	157,900	360,891	15,364	342,376	73,046	949,577	80.3	232,884	211,775	290,891	163,762
Pittsburgh & West Virginia	Nov.	92	383,579	6,020	423,891	29,050	80,784	7,194	81,958	16,138	224,375	52.9	199,516	149,896	221,637	175,655
	11 mos.	92	3,989,629	75,526	4,436,530	416,782	1,008,518	72,393	862,352	190,020	2,674,640	60.3	1,761,890	1,259,470	1,965,226	1,483,326
Fittsburgh, Shawmut & Northern	Nov.	210	164,460	2,971	171,059	23,017	37,244	1,477	66,631	5,774	134,143	78.4	36,916	34,210	23,287	33,064
	11 mos.	210	1,646,349	36,061	1,726,504	305,374	397,011	19,812	616,868	66,996	1,406,061	81.4	320,443	290,722	210,529	27,986
Quincy, Omaha & Kansas City	Nov.	250	52,754	17,350	77,381	33,869	13,509	883	35,885	2,405	86,341	111.6	—8,960	—13,604	—16,179	—22,642
	11 mos.	250	667,153	177,139	926,423	352,714	152,703	9,344	459,226	28,777	999,343	107.9	—72,920	—123,917	—157,885	—156,273
Reading Company	Nov.	1,139	6,098,494	790,792	7,272,919	838,864	1,467,183	71,715	2,626,370	276,300	5,281,034	72.6	1,991,885	1,626,808	1,840,320	1,805,070
	11 mos.	1,139	71,290,133	9,060,132	84,312,629	11,092,928	18,648,122	791,322	30,347,728	2,036,908	62,861,611	74.6	21,451,018	17,405,817	18,964,245	17,704,825
Atlantic City	Nov.	161	113,107	133,358	259,241	87,695	27,335	3,455	156,469	4,682	279,864	108.0	—20,623	—52,873	—80.154	—71,557
	11 mos.	168	1,484,519	3,103,763	4,782,152	972,274	415,509	83,126	2,328,145	55,657	3,856,038	80.6	926,114	657,329	303,321	14,121
Perkiomen	Nov.	41	126,391	4,263	134,326	5,593	12,730	106	52,834	883	72,198	53.7	62,128	56,980	51,850	43,341
	11 mos.	41	1,178,182	66,041	1,284,055	106,148	67,907	1,186	520,528	8,834	705,143	54.9	578,912	522,069	464,446	346,113
Port Reading	Nov.	19	168,523	.....	211,971	25,012	6,678	229	71,136	1,440	104,495	49.3	107,476	91,755	27,824	17,806
	11 mos.	19	1,699,511	.....	2,323,816	264,745	102,120	2,519	734,064	27,316	1,130,728	48.7	1,193,088	1,019,928	319,551	100,400
Richmond, Fred'ksburg & Potomac	Nov.	117	437,944	391,099	1,039,384	117,236	156,666	8,634	342,573	33,505	590,983	66.5	348,401	284,639	229,638	194,418
	11 mos.	117	5,501,551	4,210,457	11,715,217	1,202,134	1,772,066	98,012	3,745,486	379,436	7,508,739	64.1	4,206,478	3,505,280	2,881,716	2,401,348
Rutland	Nov.	413	322,213	78,575	525,511	106,013	114,339	10,531	210,695	13,101	456,322	86.8	69.189	45,085	51,446	43,400
	11 mos.	413	3,499,467	1,133,588	5,931,903	1,152,780	1,185,264	110,091	2,399,831	147,812	5,014,068	84.5	917,835	628,605	726,342	760,552
St. Louis-San Francisco	Nov.	4,986	6,180,365	1,341,260	8,044,922	1,080,890	1,378,137	114,233	2,659,043	248,961	5,439,975	67.6	2,604,947	2,118,068	1,936,437	1,903,176
	11 mos.	4,909	61,376,945	15,311,559	82,184,588	10,114,787	15,766,717	1,170,794	27,553,566	2,546,650	56,921,762	69.3	25,262,826	20,719,944	19,945,871	18,773,911
Ft. Worth & Rio Grande	Nov.	233	119,883	18,835	150,861	26,236	22,227	3,311	58,485	4,316	114,575	75.9	36,286	32,253	21,550	—4,978
	11 mos.	233	946,049	208,422	1,266,861	286,602	248,806	35,040	605,487	51,628	1,226,755	96.8	40,106	—4,547	—109,867	11,450
St. Louis, San Francisco & Texas	Nov.	137	177,807	16,483	201,671	38,155	26,080	4,814	61,603	6,837	137,489	68.2	64,182	61,846	39,511	56,479
	11 mos.	137	1,779,076	143,020	1,991,248	319,991	309,103	55,624	678,795	79,158	1,441,702	72.4	649,546	522,242	250,679	193,490
St. Louis Southwestern	Nov.	940	1,469,239	137,438	1,669,449	212,366	237,834	53,501	398,608	61,835	981,162	58.8	698,287	590,132	501,774	494,180
	11 mos.	943	14,242,320	1,441,427	16,558,433	2,461,045	3,367,701	575,730	4,081,899	692,493	11,353,847	68.6	5,204,586	4,493,752	3,696,554	3,685,259
St. Louis Southwestern of Texas	Nov.	807	578,434	73,708	705,905	181,293	108,468	25,049	257,792	31,638	607,034	86.0	98,871	64,031	114,055	109,503
	11 mos.	807	5,802,207	802,688	7,131,873	1,748,845	1,772,012	255,270	2,772,686	349,387	6,920,088	97.0	211,785	—93,461	430,456	408,432
San Antonio, Uvalde & Gulf	Nov.	318	78,387	15,546	103,590	19,582	14,475	3,959	45,548	5,643	89,205	86.1	14,385	12,088	2,039	946
	11 mos.	318	1,032,622	179,569	1,332,969	223,288	161,439	51,441	535,734	67,525	1 038,747	77.9	294,222	253,978	154,402	137,129
Seaboard Air Line	Nov.	3,816	3,944,870	1,291,808	5,764,993	933,199	954,900	201,881	2,015,138	183,135	4,386,396	76.1	1,378,597	1,140,150	845,446	744,720
	11 mos.	3,772	39,802,992	11,479,074	56,758,439	7,700,083	9,209,322	1,968,489	20,939,941	1,929,204	42,579,527	75.0	14,178,912	11,585,352	9,656,065	8,032,571
Southern Ry.	Nov.	6,885	9,296,961	2,390,392	12,699,103	1,552,183	2,061,416	245,909	4,355,243	326,780	8,623,614	67.9	4,075,489	3,220,767	3,079,540	3,046,735
	11 mos.	6,872	97,356,861	27,922,253	135,725,613	19,082,209	23,576,007	2,599,289	45,362,034	3,510,500	95,085,461	70.0	40,640,152	32,041,483	31,281,864	27,037,970
Alabama Great Southern	Nov.	318	667,073	152,587	876.326	69,799	154,826	22,456	257,412	24,446	535,854	61.1	340.472	261,228	284,953	178,668
	11 mos.	318	7,107,015	1,812,882	9,490,735	1,392,459	1,755,710	234,307	2,823,419	262,858	6,542,932	68.9	2,947,803	2,322,996	2,552,777	2,151,492
Cin., New Orleans & Tex. Pacific	Nov.	338	1,523,580	401,236	2,046,714	165,525	310,662	49,964	542,226	51,826	1,142,893	55.8	903,821	756,561	737,823	512,810
	11 mos.	338	16,089,901	4,085,257	21,339,445	2,657,089	3,718,039	479,763	5,794,729	548,838	13,379,414	62.7	7,960,031	6,762,657	6,603,691	5,076,616
Georgia Southern & Florida	Nov.	401	409,304	188,622	640.622	59,444	76,749	15,663	266,389	10,554	433,581	67.7	206,441	176,974	105,668	113,971
	11 mos.	401	3,782,766	1,703,820	6,064 476	711,769	800.008	147,860	2,195,408	116,475	4,027,835	66.4	2,036,641	1,701,780	1,223,876	671,618
New Orleans & Northeastern	Nov.	207	436,796	73,155	546.187	67,215	78,780	12,700	144,388	15,841	322,979	59.1	223,208	160,619	137,622	68,240
	11 mos.	207	4,264,476	877,570	5,517,324	700.135	842,496	135,768	1,535,106	162,770	3,419,383	62.0	2,097,941	1,508,849	1,293,117	1,071,323

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1925—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or less).	Net after rents.	Net after rents, 1924.
Northern Alabama	Nov.	110	$119,642	$10,150	$132,848	$23,479	$5,371	$2,197	$39,833	$2,801	$73,680	55.5	$59,168	$54,250	$27,180	$18,387
	11 mos.	110	1,297,365	110,646	1,442,081	257,471	54,139	25,581	434,212	33,200	804,473	55.8	637,608	566,762	253,815	182,849
Southern Pacific	Nov.	8,736	13,329,690	3,134,573	18,008,576	1,999,509	2,497,254	356,459	6,130,670	556,260	11,761,504	65.3	6,247,072	4,618,764	4,301,794	2,886,074
	11 mos.	8,722	136,688,403	39,069,124	193,273,148	25,719,463	30,529,323	3,515,728	68,256,864	6,304,968	136,929,286	70.8	56,343,862	40,160,130	37,120,117	37,699,057
Atlantic Steamship Lines	Nov.	...	932,209	30,727	1,084,446	15,684	175,642	16,187	688,215	33,721	929,449	85.7	154,997	138,647	138,516	72,315
	11 mos.	...	8,725,737	480,186	10,551,639	173,516	2,355,949	195,032	7,365,617	365,711	10,455,825	99.1	95,814	—66,571	—68,733	292,091
Galveston, Harrisb'g & S. Antonio	Nov.	2,096	1,897,559	422,429	2,485,519	343,445	365,651	60,694	819,296	117,005	1,726,632	69.5	758,887	619,613	524,752	626,635
	11 mos.	2,101	20,397,171	4,722,878	26,904,886	4,876,425	5,252,784	598,444	9,556,727	1,267,716	21,769,738	80.9	5,135,148	4,121,858	3,329,088	5,545,630
Houston & Texas Central	Nov.	929	1,004,375	261,576	1,351,368	152,036	206,023	27,613	403,788	48,313	838,404	62.0	512,964	439,071	382,664	333,354
	11 mos.	929	9,786,761	2,749,912	13,434,755	2,393,998	2,586,114	299,303	4,533,108	528,060	10,346,722	77.0	3,088,033	2,362,609	1,830,075	1,933,707
Houston, East & West Texas	Nov.	191	223,280	41,697	278,069	27,740	46,686	4,359	75,660	9,482	163,915	58.9	114,154	87,509	70,112	41,015
	11 mos.	191	2,543,352	435,801	3,119,115	554,691	565,838	42,208	1,007,426	102,591	2,269,814	72.8	849,301	712,521	514,420	156,037
Louisiana Western	Nov.	207	267,959	72,915	363,689	38,847	51,919	13,260	116,815	19,608	244,300	67.2	119,389	77,642	61,914	93,154
	11 mos.	207	2,773,762	855,719	3,882,013	572,695	753,444	141,452	1,201,969	210,933	2,923,410	75.3	958,603	671,351	569,090	768,420
Morgan's L. & T. R. R. & S. S. Co.	Nov.	400	638,561	117,624	811,017	84,145	120,458	21,754	347,403	39,210	617,415	76.1	193,602	139,889	99,893	59,532
	11 mos.	400	5,710,996	1,358,731	7,641,501	1,178,774	1,736,284	228,756	3,290,926	418,163	6,903,949	90.3	737,552	177,879	—168,217	—165,544
Texas & New Orleans	Nov.	544	659,806	157,517	871,896	116,491	172,042	15,914	433,613	35,192	773,290	88.7	98,606	66,533	32,212	3,639
	11 mos.	541	7,897,906	1,661,703	10,140,265	1,651,965	2,201,831	154,491	3,565,119	372,150	7,976,622	78.7	2,163,643	1,809,334	1,432,558	242,977
Spokane, Portland & Seattle	Nov.	554	585,811	95,728	747,782	60,304	98,344	9,586	211,782	20,570	408,417	54.6	339,365	295,891	278,195	292,618
	11 mos.	554	5,412,237	1,336,457	7,499,595	966,428	1,100,356	116,876	2,335,941	231,569	4,843,140	64.6	2,656,455	1,856,236	1,652,590	2,054,409
Tennessee Central	Nov.	296	210,322	29,959	257,027	41,738	44,039	7,032	96,787	10,148	199,437	77.6	57,590	50,354	28,761	32,096
	11 mos.	296	2,360,898	396,118	2,926,170	507,720	458,700	80,456	1,049,579	120,176	2,215,567	75.7	710,603	629,144	386,373	406,729
Terminal Railroad Assn. of St. L.	Nov	37	.....	.....	453,221	122,930	44,128	980	150,283	8,014	329,858	72.8	123,363	47,030	134,750	204,054
	11 mos.	37	.....	.....	4,733,314	917,132	505,314	11,079	1,655,545	93,902	3,221,061	68.1	1,512,253	768,431	1,863,110	1,742,882
East St. Louis Connecting	Nov.	1	.....	.....	184,110	19,847	9,315	310	68,566	2,423	100,461	54.6	83,649	78,105	56,315	47,327
	11 mos.	1	.....	.....	2,058,861	256,650	130,703	3,505	740,973	33,059	1,164,890	56.6	893,971	837,781	609,947	581,836
St. Louis Merchant's Bridge Tenn.	Nov.	9	.....	.....	448,174	66,080	28,292	928	193,367	6,391	295,058	65.8	153,116	111,074	117,585	90,362
	11 mos.	9	.....	.....	4,526,148	807,804	318,479	10,480	1,971,944	81,981	3,190,688	70.5	1,335,460	998,005	1,058,197	698,869
St. Louis Transfer	Nov.	6	.....	.....	57,398	11,244	4,257	167	32,875	1,196	49,739	86.7	7,659	7,126	1,522	7,327
	11 mos.	6	.....	.....	703,230	119,614	60,992	1,888	374,832	18,107	575,433	81.8	127,797	123,169	60,609	46,014
Toledo, Peoria & Western	Nov.	247	96,205	23,928	130,240	9,556	39,905	2,133	66,781	6,606	124,981	95.2	5,259	2,259	—1,600	—10,612
	11 mos.	247	1,100,188	262,936	1,486,038	265,127	426,422	24,265	756,403	76,764	1,548,786	104.2	—62,748	—149,806	—229,487	—50,846
Trinity & Brazos Valley	Nov.	367	289,961	12,225	309,407	73,562	33,391	4,630	91,235	11,134	212,907	68.8	96,500	87,609	58,781	109,058
	11 mos.	368	2,142,411	131,119	2,355,139	689,099	505,190	45,137	1,020,668	128,533	2,383,484	101.2	—28,345	—115,248	—390,074	—284,090
Ulster & Delaware	Nov.	128	24,392	6,613	60,122	11,221	10,427	1,388	39,458	5,950	68,444	113.8	—8,322	—13,822	—14,865	3,047
	11 mos.	128	575,018	305,765	1,267,586	209,003	182,304	19,974	619,421	67,642	1,098,344	86.6	169,242	108,740	52,176	132,862
Union Railroad of Penna.	Nov.	45	.....	.....	876,870	84,243	150,815	231	407,637	9,114	652,638	74.4	224,832	177,602	225,007	83,270
	11 mos.	45	.....	.....	10,579,820	1,056,189	2,386,971	2,037	4,540,162	107,379	8,092,696	76.5	2,487,124	2,117,429	2,657,942	1,350,937
Union Pacific	Nov.	3,687	8,794,883	1,162,359	10,751,849	983,241	1,972,498	160,823	2,914,857	281,145	6,481,946	60.3	4,269,903	3,756,117	3,274,685	2,744,504
	11 mos.	3,687	76,978,099	15,367,785	101,186,478	11,857,348	19,714,218	1,772,719	27,099,991	3,110,126	65,598,539	64.8	35,587,939	29,165,303	26,808,834	25,420,638
Oregon Short Line	Nov.	2,443	3,104,045	346,669	3,621,001	379,199	577,563	42,253	1,060,922	111,981	2,226,466	61.5	1,394,535	1,168,001	1,051,063	889,705
	11 mos.	2,434	25,628,243	4,418,253	32,295,721	5,459,115	5,545,293	534,527	9,771,295	1,196,438	23,148,556	71.7	9,147,165	6,594,629	5,792,145	5,122,768
Oregon, Wash. R. R. & Nav. Co.	Nov.	2,237	1,932,433	306,023	2,432,579	423,164	388,920	59,260	914,892	108,309	1,918,544	78.9	514,035	342,813	233,241	268,438
	11 mos.	2,237	19,208,816	4,124,436	35,580,997	4,791,740	3,986,518	719,874	9,650,706	1,255,833	20,720,675	81.0	4,860,322	2,987,146	1,836,201	2,694,256
Los Angeles & Salt Lake	Nov.	1,207	1,652,145	320,030	2,160,163	427,769	441,231	71,496	729,002	89,659	1,824,686	84.5	335,477	218,358	110,675	—7,898
	11 mos.	1,207	15,689,695	4,636,879	22,394,652	3,789,628	4,225,189	728,187	7,452,064	748,932	17,782,053	79.4	4,612,599	3,141,646	2,191,146	1,742,528
St. Joseph & Grand Island	Nov.	258	321,919	18,664	354,939	42,846	44,088	2,810	110,661	11,574	211,979	59.7	142,960	130,843	113,921	21,957
	11 mos.	258	2,771,207	208,436	3,168,346	548,083	485,706	31,647	1,121,421	133,864	2,321,224	73.3	847,122	713,523	552,610	276,817
Utah	Nov.	102	167,956	212	168,920	21,750	36,642	340	34,839	8,452	102,033	60.4	66,887	60,476	52,118	48,352
	11 mos.	102	1,565,451	2,927	1,578,053	202,087	418,311	4,136	341,419	72,033	1,037,968	65.8	540,085	459,197	405,365	242,211
Virginian	Nov.	545	1,499,286	56,644	1,662,622	228,271	330,048	11,607	381,238	42,781	990,149	59.6	672,473	563,052	667,655	582,323
	11 mos.	545	15,526,151	630,161	17,336,402	2,519,064	3,763,245	142,822	4,091,684	379,259	10,828,462	62.5	6,507,940	5,304,276	5,841,145	5,150,292
Wabash	Nov.	2,524	4,834,808	740,111	6,075,222	544,411	1,008,457	154,026	2,185,731	155,842	4,068,428	67.0	2,006,794	1,633,252	1,401,310	922,306
	11 mos.	2,524	50,506,329	8,508,846	63,619,586	8,884,698	11,358,726	1,662,282	23,128,048	1,790,779	47,118,292	74.1	16,501,294	13,636,766	10,733,282	8,450,711
Western Maryland	Nov.	804	1,632,237	43,632	1,727,910	174,985	495,024	34,169	523,295	43,179	1,278,572	74.0	449,038	384,038	364,597	293,115
	11 mos.	804	16,663,490	619,426	18,101,756	2,272,076	4,046,966	404,891	5,251,720	489,233	12,578,616	69.4	5,523,140	4,818,140	4,394,745	3,235,061
Western Pacific	Nov.	1,042	1,171,186	90,037	1,347,103	153,868	202,588	34,670	479,814	41,087	941,740	69.9	405,363	310,679	396,632	383,827
	11 mos.	1,042	11,307,697	1,869,825	14,356,258	2,093,189	2,254,182	422,448	4,825,240	397,043	10,478,802	73.0	3,877,456	2,991,405	3,915,592	2,776,930
Wheeling & Lake Erie	Nov.	511	1,620,563	36,782	1,782,638	240,583	385,371	30,188	522,076	62,058	1,235,743	69.3	546,895	418,088	420,109	199,297
	11 mos.	511	17,129,732	501,903	18,837,611	2,520,101	4,264,685	330,114	5,535,858	565,139	13,232,610	70.2	5,605,001	4,137,807	4,068,692	2,215,601

Another Quebec Line Urged for Rouyn Goldfields

A large deputation last week waited upon Premier L. A. Taschereau at Quebec urging that the provincial government provide a subsidy to the Canadian Pacific to extend the line, that now reaches to Angliers, into the Rouyn gold fields in northwestern Quebec. The same arguments were used in this project's behalf as were used in the case of the Canadian National branch from O'Brien, on the National Transcontinental, south 50 miles to the gold fields. This latter line is now in process of construction. The delegation urged that as the Supreme Court of Canada had ruled that the federal government had the right to grant power to the Algoma Central of Northern Ontario to build eastward across Quebec Crown lands into Rouyn, and that road, if it got the power, might build in and divert from Quebec into Ontario business that rightly belonged to the former. No promises were made by Premier Taschereau.

Western Railway Club Discusses Lubrication

Following a Dutch Treat dinner at the Hotel Sherman, Chicago, Monday evening, January 18, the Western Railway Club adjourned to the Crystal room and devoted the entire meeting to a discussion of the lubrication of railroad car equipment. The paper of the evening was presented by G. E. Dailey, supervisor of lubrication of the Chicago, Burlington & Quincy, who went into the matter in considerable detail and gave the members many intensely practical suggestions based on his investigation and study of lubricating methods as actually followed in freight yards, engine terminals and on the road. The most important point brought out by Mr. Dailey was the need for a well-trained force of oilers or packers which should not be considered non-productive, or in the class of common laborers, since, if their work is done well, fewer car men will be required on the repair track to change wheels set out on account of cut journals. It was brought out in the discussion that higher rates of pay than now generally given to oilers and packers are necessary in order to attract a somewhat higher grade of men to this work and make them willing to stay on the job, once they have learned the details.

Central of New Jersey Locomotive Repairs Criticized

The Interstate Commerce Commission has issued a report as a result of its investigation of the cost of locomotive repairs of the Central of New Jersey at outside shops during the fall of 1921 and during 1922 and 1923, finding that it exceeded the cost of substantially similar work in the company's own shops and that the greater portion of such excess cost was an "unreasonable expenditure for maintenance of equipment and not in the interest of efficient and economical management as required by section 15a of the interstate commerce act." The present report relates to 117 locomotives repaired under five contracts and as to 50 locomotives repaired by the Crucible Steel Company, the commission finds that the contract, made in March, under a cost-plus basis, in preparation for the next winter, represents "improvidence in management which should be considered when fixing rates intended to yield the standard return contemplated by law."

New Haven to Operate Hartford-New Haven Buses

The New England Transportation Company, the bus subsidiary of the New York, New Haven & Hartford, has been granted a permit by the Connecticut Public Utilities Commission to operate buses between New Haven, Conn., and Hartford (approximately 37 miles).

This route parallels one of the company's main railway routes and it is understood that the bus service will make possible the elimination of a number of train stops. The area served is densely populated. An independent bus operator sought a permit for the same route but the application was denied.

Other permits in Connecticut granted at the same time are Hartford to Broad Brook (express only)—15 miles—and Hartford to Suffield—17 miles. These lines will supplant or augment motor rail car service. Previous bus routes granted in Connecticut to the New England Transportation Company were reported in the *Railway Age* of December 5 and December 26. Operations were begun on all the routes recently authorized, except that between Hartford and Waterbury, on January 17. Operations on this last named route has been postponed pending an appeal to the courts by an interurban electric line serving the territory.

Proposed Legislation

A sub-committee of the Senate committee on interstate commerce, which has been working on a re-draft of the bill introduced by Senator Smith of South Carolina to increase the membership of the Interstate Commerce Commission to twelve, with provision that as vacancies occur the new members shall be appointed regionally, has conferred on the subject with Commissioner Esch of the Interstate Commerce Commission and has practically reached the conclusion that the country should be divided into four districts for this purpose and that there should be twelve commissioners. It is likely that hearings will be held on the bill when it is completed by the decision as to how the states shall be grouped into districts.

Under a bill introduced by Representative Bloom, of New York, H. R. 7671, the President would be authorized to take temporary control of any or all means of production or of transportation of any necessity of life "when an emergency exists through the suspension of or lessening of operation of the means of production of or transportation of any necessity of life for a period of at least 30 days, so that the normal supply of the necessities of life and transportation thereof are suspended or lessened and the free and normal operation of industry are impaired."

Representative Doyle, of Illinois, has introduced a bill, H. R. 7480, to prohibit the collection of a surcharge for sleeping or parlor car accommodations.

Senator Wadsworth has introduced a bill, S. 2615, to authorize common carriers to transport any blind person, accompanied by a guide, for one fare.

Labor Board Issues First Report

The maintenance of the United States Railroad Labor Board, created on April 15, 1920, has cost $2,101,376, including the appropriation for the fiscal year ending June 30, 1926, according to a report the board has issued covering its activities. The report shows that 13,941 disputes were referred to the board from the date of its establishment to December 31, 1925, and that disposition was made of 13,447. Of this number 6,006 were local disputes. The remainder of the cases, totalling 7,935, were of a general nature, affecting large groups of railroads and their employees in any or all classes of service, and were requests for wage increases or reductions, or the general revision of rules governing working conditions.

The report covers government participation in railway labor disputes prior to the establishment of the Labor Board, including a summary of the Act of 1888, the Erdman Act of 1898, the Newlands Act of 1913, the Adamson Law, and procedure under government control. It also considers the growth of the present law and the Railroad Labor Board, describing labor conditions at the end of federal control, the labor provisions of the Transportation Act, and the activities of the bi-partisan board. In Part 3 of the report, devoted to the policy and activities of the Railroad Labor Board, it analyzes wage decisions, rule decisions, other questions considered by the board, the volume of work, the enforcement of decisions and the cost of maintenance.

Annual Meeting of Central Railway Club

The thirty-seventh annual dinner of the Central Railway Club was held at the Hotel Statler, Buffalo, N. Y., Thursday evening, January 14. As indicated at the annual meeting of the club, which was held during the afternoon, the membership has grown rapidly during the past year and is now in the neighborhood of 1,650.

There were about 1,200 guests at the dinner in the evening, more than 80 of whom went to Buffalo from New York on a special train over the Delaware, Lackawanna & Western. Charles C. Pierce, of the General Electric Company, Boston, Mass., was toastmaster, and addresses were made by John M. Davis, president of the Delaware, Lackawanna & Western; E. T. Whiter, vice-president and general manager of the Central Region, Pennsylvania Railroad; and Rev. Henry A. Mooney. Among the special musical numbers on the program were several selections from the Canadian National Railway Quartette. The general chairman of the dinner committee was E. F. Ryan, terminal superintendent, Buffalo, Rochester & Pittsburgh.

At the business meeting in the afternoon announcement was made of the election of the following officers: President, A. E. Calkins, superintendent rolling stock, New York Central; vice-

presidents, F. M. Barker, superintendent, Lehigh Valley; R. E. Woodruff, superintendent, Erie Railroad; and E. F. Ryan, terminal superintendent, Buffalo, Rochester & Pittsburgh.

Bangor & Aroostook Complains of A.R.A. Rules Governing Compensation for Destroyed Cars

The Bangor & Aroostook has filed a complaint with the Interstate Commerce Commission against the American Railway Association and its member roads asserting that the rules for compensation to be paid and settlement to be made for the use of cars destroyed on the line of a railroad other than the owner of the cars, and the interpretations of such rules adopted by the A. R. A., are unjust, unreasonable, arbitrary and in violation of section 1 of the interstate commerce act. Complainant particularly objects to the rules governing compensation for rebuilt cars at rates based on depreciation from the date that the car from which the reused materials were taken originally was placed in service. The commission is asked to establish reasonable rules, retroactive to October 30, 1922, the date when protest and complaint was made to the A. R. A.

The Bangor & Aroostook, according to the complaint, has had several hundred cars rebuilt and is obliged either to withdraw from the A. R. A. and its Mechanical Division, or to accept approximately 25 per cent of the depreciated cost of the car classified as "rebuilt" under the rules; or in other words, about one-third of the amount of the lien on such car authorized by the Interstate Commerce Commission in connection with equipment trusts. At a hearing before the arbitration committee of the Mechanical Division on December 14, 1922, the complaint says, the unfairness of the rule was urged not only by the Bangor & Aroostook but by many other car owners, including the Baltimore & Ohio; Central Vermont; Delaware & Hudson; Great Northern; Northern Pacific; Lehigh Valley; Missouri Pacific; Missouri-Kansas-Texas; Chicago, Rock Island & Pacific; St. Louis Southwestern; Wabash; Seaboard Air Line; Pere Marquette; Central of New Jersey, and Atlantic Coast Line. The subject was then referred to a special committee which had made recommendations for changes in the rules satisfactory to the complainant, but, says the complaint, the recommendations have not been submitted to members of the A. R. A. for consideration.

Reading Band at New York Railroad Club Meeting

A rather unusual experiment, which turned out to be a real success, was the program by the Reading Seashore Band at the meeting of the New York Railroad Club on Friday evening, January 15. The program was divided into two parts, the first, one-half hour long, preceding the address of the evening, which was made by F. J. Lisman, of F. J. Lisman & Co. Mr. Lisman discussed the Transportation Act of 1920—Its Workings and Proposed Amendments. Particular attention was given to the questions concerning valuation, recapture, consolidation and the new Cummins bill. In the open forum which followed the address, Mr. Lisman was asked to present his views on the Potter plan.

The Reading Seashore Band, under the direction of John L. Snyder, was made available through the courtesy of the Central Railroad of New Jersey and the Reading Company. The program was as follows:

PART I—8 TO 8:30 P. M.

March—Colossus of Columbia ..... Alexander
Melodies from Rose Marie ..... Friml
The Hall of Fame ..... Safranek

PART II—9:30 TO 10:15 P. M.

Overture—Oberon ..... Weber
Southern Rhapsody ..... Hosmer
Celebrated Minuet ..... Paderewski
Little Coquette ..... Reiser
Souvenir of Wagner ..... Tobani

American Engineering Council

The American Engineering Council at its annual meeting in Washington, D. C., last week, elected as president for the ensuing year Dexter S. Kimball, Dean of the College of Engineering, Cornell University, and past president of the American Society of Mechanical Engineers; and Gardner S. Williams and Irving E. Moultrop vice-presidents. The secretary is Lawrence W. Wallace, Washington.

Final approval was given to the bill to be proposed in Congress to provide for a national department of Public Works and Domain to take the place of the Department of the Interior.

The meeting adopted a five-year program of research as a part of a general organized attack on the problems of industry and agriculture, with the aim of wiping out waste. This enterprise is a continuance of the work outlined by Secretary Hoover in 1921. Eight nation-wide engineering studies were proposed, the cost of which would be $335,000.

It was voted to postpone action on the Giant power report until the subject could be further studied.

Administrative board meetings of the Council were planned to be held in Louisville, Ky., and in Detroit, Mich.; also probably one in Richmond, Va.

Arguments on Proposed New Railroad Across Pennsylvania

The Interstate Commerce Commission devoted a day on January 14 to hearing oral arguments on the application of the New York, Pittsburgh & Chicago for a certificate authorizing the construction of a new railroad between Allegheny, Pa., and Easton, the principal argument for the applicant being made by Charles E. Hughes, while that for the opposing trunk lines was made by Henry W. Bikle of the Pennsylvania. Mr. Hughes said the purpose of the applicant is to build the line and that there is no doubt of the ability to finance it. To the objection that detailed financing plans had not been shown, nor arrangements for through traffic connections completed, he answered that it was difficult to conclude such matters on an if and when basis.

Much of the argument centered around the question whether there would be traffic enough to support a line costing some $260,000,000 without taking it away from existing lines, while adding to the total railroad investment which is expected to produce a fair return. Mr. Hughes said the commission should remember that the thing to be considered is the condition that will prevail five years hence, as it would take that long to build the line, and he referred to L. F. Loree, who said that in his estimation the greatest danger confronting the country is that of insufficiency of transportation in the somewhat imminent future. Mr. Hughes also denied that existing lines have any right to be preferred in the grant of certificates of convenience and necessity or that they should have power to veto new projects by disapproving them. He also said that there would be a real loss of state rights if the certificate should not be granted because the state of Pennsylvania has twice expressed its approval of the project and is awaiting action of the federal commission under the transportation act. If the certificate is not granted, he said, the charters will be lost. The question comes down, he concluded, to one of judgment as to the probable future density of traffic; and as the commission is as well qualified to exercise that judgment as anyone, he asked that the project be not strangled in its birth.

Mr. Bikle, opposing the granting of the certificate, said that the line obviously would serve no material local public convenience and that the purpose is to secure a share of through traffic. As the railroads are not yet earning a fair return, he said, it is clear that the construction of an expensive additional road, which would not develop traffic, would reduce the return on railroad investment. The most economical way to meet the future needs of traffic, he said, is by the expansion and intensified use of existing facilities, and the building of the line would be in direct opposition to the present movement toward consolidation of the railroads into a few great systems.

THE CENTRAL OF GEORGIA has been calculating its expenses for a year in terms of days, the unit being one three-hundred-and-sixty-fifth of the gross receipts for the year. It took the revenue for 159 days to meet the payroll, and that for 94 days went for the purchase of material and supplies. The income for 22 days' operation paid for fuel, and the earnings of 17 days went to pay taxes. The results of 54 days' operation were required to pay interest charges and rentals. These payments combined used up the income from 346 days; and of the earnings from the 19 remaining days, 14 days were paid for dividends and five for the improvement of the property. The Central of Georgia is paying more for taxes than it does for dividends. Only five days' receipts were available for the improvement of transportation facilities, and it was necessary to issue bonds for improvements and additional equipment. This accounts for the fact that 54 days' revenues were required to pay interest on borrowed money.

Traffic News

Package freight-car service out of St. Louis, Mo., and Kansas City to Oklahoma and Texas points on the Missouri-Kansas-Texas averaged 99.9 per cent on time during 1925.

The Women's Traffic Club of Los Angeles, at its regular meeting on January 6, listened to instructive addresses by Roger Marchetti, O. T. Helpling and E. A. Bryan. Three new members were taken in.

Supervision of bus lines is dealt with briefly by the New York State Public Service Commission in its annual report issued on January 11. In the opinion of the commission, there should be added to the present public service commission law an article specifying in detail the supervision which the Legislature desires the commission to exercise over motor bus lines.

One of the three Interstate Commerce Commission hearings scheduled in connection with the New Orleans rate relationship case will be held at Galveston, Tex., on February 10, instead of at Ft. Worth, as previously announced. A hearing will be held at Ft. Worth, Tex., on February 16 for the convenience of petroleum interests. The first hearing will be held on February 3 at New Orleans, La.

The decision of the federal district court authorizing the Colorado & Southern to discontinue passenger trains between Buena Vista, Colo., and Romley, thereby overruling the Colorado commission, which had ordered the trains kept in service, has been taken by the commission to the Supreme Court, contending that the state has jurisdiction over railroads which operate wholly within the state. The case will be argued before the Supreme Court on January 25.

The Fort Wayne Transportation Club, at a meeting of the board of governors, has chosen as its president V. W. Davies, traffic manager of S. F. Bowser & Co.; J. Hudson Day, division freight agent of the New York, Chicago & St. Louis, is first vice-president, C. E. Dillon, traffic manager of the International Motor Truck Company, second vice-president, Charles E. Drew, traffic manager of the Rub-No-More Company, secretary, and E. G. Howard, freight agent of the New York Central, treasurer.

Applications of several motor trucking concerns for permission to operate extensive common carrier truck lines in Minnesota will be considered at once by the Railroad and Warehouse Commission of that state. The lines under consideration are directly in competition with several railroads. Press reports suggest that the attitude of the commission may be more favorable toward the truck operators because of the recent order of the Interstate Commerce Commission raising freight rates. Several trucking companies have proposed to operate trucks on fixed schedules and over specified routes.

The Minneapolis, St. Paul & Sault Ste. Marie and the Northern Pacific have applied to the Interstate Commerce Commission for permission to consolidate their passenger train service between Minneapolis, Minn., Duluth and Superior, Wis., about 160 miles. The pooling plan is expected to afford a saving of $150,000 a year in the combined operating expenses of the divisions of the two roads which serve Minneapolis, the head of the lakes, and intervening territory. The two railways now operate a total of five trains each way between Minneapolis and Duluth and when the plan is approved two of the trains will be discontinued.

Damage Payments Reduced

Claims resulting from loss and damage to freight in 1925 were less, when compared with the volume of freight handled, than in any previous year on record. The Freight Claim Division of the American Railway Association reports that the total for the year was about $40,000,000, although more cars were loaded with revenue freight during the year than ever before. The total of damages paid for the year was about 16.75 per cent under 1924 and approximately 19 per cent under 1923. The total paid in 1925 is calculated on actual payments for the first nine months and an estimate as to the last three months. During the first nine months, claim payments amounted to $29,481,082, a decrease of $7,776,278 or 20.9 per cent under the amount for corresponding period last year and a decrease of $6,427,353 or 17.9 per cent under 1923.

Petition Filed for Increase in Freight Rates

Railroads operating in Missouri have filed an application with the Missouri Public Service Commission asking for a class rate readjustment. The action taken by the railroads in Missouri follows the filing of an application with the Interstate Commerce Commission by western carriers asking for a readjustment of class rates in western territory. Railroads in other states in the western territory also propose to file applications with state commissions.

B. & M. Advances Milk Rates

The Boston & Maine has given notice that its milk and cream traffic is carried on at a loss of more than $700,000 a year, and that it is preparing tariffs for an increase of 20 per cent in the present rates. This advance will amount to less than ⅛ of a cent a quart in the retail price of milk. The company has communicated its findings to representatives of the milk industry, and has been informed that an increase of ½ of a cent a quart will probably have to be passed on to the distributor and the consumer; but, says the railroad, no responsibility can be accepted for any advance over the ⅛ of a cent. The average haul on milk carried to Boston is 212 miles and the average railroad revenue less than one cent a quart. Studies of cost have shown the expense of handling milk and cream to be 34 per cent greater than the revenues, and other New England lines have made similar findings; and the increase asked amounts to little more than one-half of this loss. Comparisons have been made showing that the rates on milk to the Boston market are 12½ per cent. less than those to New York and Philadelphia.

Diversified Farming Campaign on St. Paul Successful

The Chicago, Milwaukee & St. Paul has just completed in North Dakota and Montana a diversified farming campaign in which were held 22 meetings, attended by great numbers of farmers. Addresses were made on corn, hogs, sheep, dairying, poultry, seed, oil, etc. Among the speakers were W. R. Remley, of the International Harvester Company, A. J. Ogaard, of the University of Montana, O. A. Barton, of the North Dakota Agricultural College, Charles A. Goss, editor of the Dairy Farmer of Des Moines, Ia., and Charles Collisson, of the Minneapolis Tribune. Diversified farming is increasingly appreciated. Poultry is grown more than ever before. Farmers are beginning to grow corn and barley to feed to hogs to ship to west coast markets. The attractive sheep and wool prices during the past two or three years have awakened farmers to the possibilities of small flocks of sheep. There is a considerable acreage of both alfalfa and sweet clover being grown for seed and the growers are making money from it. Wheat yields this year have in some cases been doubled and trebled when following corn or a legume.

Over 600 New Industries Located on Missouri Pacific

A total of 617 new industries with an aggregate invested capital of $21,134,550 were located on the lines of the Missouri Pacific in 1925, which industries it is expected will require 220,996 carloads of freight yearly in the conduct of their various businesses. The establishment of these industries necessitated the construction of 208 additional industry tracks with a total length of 20½ miles at a cost of $269,629. Oil storage stations head the list, 163 of which were established during the year, with invested capital of $1,792,000. Lumber and building material yards were second, 54, with invested capital of $934,000; coal and wood yards third, 54, with invested capital of $607,850; contractors' plants, 27, sawmills, 26, sand and gravel plants, 25, grain and feed warehouses, 24, log and tie loading plants, 24, and cotton gins, 19. Sixteen new coal mines were opened and 13 canning factories were established.

The largest volume of traffic is expected from the oil loading stations, it being estimated that they will increase the traffic on the Missouri Pacific 54,490 cars, while the sand and gravel plants, it is estimated, will have an output of 37,680 cars. The annual

output of the contractors' plants is estimated at 21,934 cars, the log and tie loading yards 18,085 cars, and new coal mines 11,055 cars.

These figures do not include establishments on the Gulf Coast Lines or on the International-Great Northern. There were 39 new industries located on the Gulf Coast Lines during the year with aggregate capital investment of $1,082,800, while 77 new industries on the International-Great Northern represent a capital investment of $485,000.

Federal Court Sustains I. C. C. in Minnesota Rate Case

The United States District Court for Minnesota has enjoined the railroad and warehouse commission of that state from enforcing its order forbidding the use of certain intrastate freight rates prescribed by the Interstate Commerce Commission. The rates referred to are those prescribed by the federal commission to supersede those in force for the past ten years, which were fixed by the state commission in a general order dealing with all common points, the federal commission holding that the state-made rates were unreasonably low, as compared with interstate tariffs. Certain business interests of Fargo, N. D., and Watertown, Minn., entered complaint before the commission, at Washington, alleging discrimination as between intrastate and interstate rates and unfair preference for Minneapolis and St. Paul, and the commission settled the question by advancing intrastate rates. This order made increases in some cases of as much as 40 per cent. The complaints were entered in 1923, but the I. C. C. order was not issued until July, 1925, to become effective in September. The Minnesota order, calling for disobedience of the federal decision, was issued in November, and the railroads then applied for the injunction.

Freight Traffic in November

The volume of freight traffic moved by the Class I railroads in November, 1925, was the greatest for any November on record, according to reports compiled by the Bureau of Railway Economics, amounting to 40,785,982,000 net ton miles. This was an increase of 2,719,148,000 ton miles or 7.1 per cent over November, 1924, and an increase of 2,627,759,000 net ton miles or 6.9 per cent over November, 1923. Compared with November, 1920, it was an increase of 9.4 per cent.

In the Eastern district in November, freight traffic showed an increase of 8.9 per cent over that of the same month in 1924, while in the Southern district there was an increase of eight per cent. The Western district showed an increase of 4.5 per cent.

For the first eleven months in 1925, freight traffic amounted to 418,392,078,000 net ton miles. Compared with the corresponding period in 1924, this was an increase of six per cent but the total was less than that for 1923.

In the Eastern district, freight traffic for the eleven months period showed an increase of 6.8 per cent over the same period in 1924, while in the Southern district the increase was 9.8 per cent. The Western district showed an increase of 3.6 per cent.

The daily average movement of freight cars in November, 1925, was also the highest for any November on record. The average was 30.9 miles per day, an increase of 2.5 miles over that for November, 1924, and an increase of 1.6 miles above the average for November, 1923. For the eleven months to November 30, the average movement was 28.4 miles in 1925 which was 1.5 miles greater than that for the corresponding period in 1924.

The average load per freight car in November was 27.2 tons, the same as that for November, 1924, but an increase of one-fifth of a ton over that of November, 1923. Compared with October, 1925, it was an increase of nine-tenths of one ton.

I. C. C. to Investigate Car Hire Rules

The Interstate Commerce Commission has instituted a general investigation involving the rules for car hire settlement between railroads. This action was taken on petition of the American Short Line Railroad Association and in certain complaints by individual short lines. The complaint of the short line association, which it says was not placed before the commission until after three years of unsuccessful negotiations with the general committee of the American Railway Association, is expressed in part in the following from its petition:

"*** The car service and per diem rules of the American Railway Association as they now exist, were conceived upon a theory of uniformity between trunk roads whereby disadvantages are offset by corresponding advantages and are unsound, unreasonable and unjustly discriminatory, to the extent that said rules are founded upon a theoretical basis of reciprocal equalization which makes no provision for wide variations in local conditions. Such short lines as originate a considerable tonnage of lumber, stone, coal, minerals, etc., are performing the most difficult and costly part of the transportation haul, with relatively greater benefits to the trunk roads than to the short lines***.

"That insofar as there is any attempted equalizing of the ownership of cars with the lack of ownership of cars between the powerful trunk roads on the one hand and the short lines on the other hand, through the medium of a universally uniform basis for per diem settlement between trunk roads, and between trunk roads on the one hand and short lines on the other hand, the present rules are palpably unreasonable and unsound*** most short lines have no means of counter-balancing or offsetting the ill effects of the present rules by means of balancing eastbound tonnage with westbound tonnage or northbound tonnage with southbound tonnage because the tonnage of such short roads is almost invariably one-way tonnage."

Primarily the association sought to have paragraph *b* of Per Diem Rule 6 repealed, to permit "subscriber" roads to locally adjust all car-hire questions with non-subscribers.

Mid-West Regional Advisory Board Meets at Peoria

Increased business in the mid-west was predicted at the mid-winter meeting of the Mid-West Regional Advisory Board at Peoria, Ill., on January 20. Grain movement from country stations in the next three months will amount to 95,000 cars, or an increase of 15 per cent over the last quarter and of 30 per cent over the same period last year. The approximate number of box cars required during January, February and March for outbound shipments of paper and pulp and products thereof is 17,570, which represents an increase of about 4½ per cent over the last three months. Inbound shipments of pulp, straw and various other commodities used in the manufacture of paper and boards during the same period will amount to 35,120, an increase of about 40 per cent over the requirements for the last three months. The petroleum industry as a whole is expected to show an increased movement during the next three months of approximately 15 per cent as compared with the same period a year ago. Coal, coke, oil and electric merchandise are expected to show an increase of 10 per cent for the first quarter of 1926. The reports indicated that there will be an increase of from 10 to 12 per cent in shipments of butter from Iowa, while they indicate a butter and cheese production of from 2 to 5 per cent above that of last year for the rest of the mid-west territory.

The movement of fresh fruit and vegetables during the months of February, March and April will require 11,030 box and refrigerator cars, of which 8,650 will be needed for potatoes, 1,360 for onions and 550 for cabbage.

Brick and clay products will show an increase in the first three months of this year as compared with 1925, as will likewise the beverage industry, the increase in the latter line amounting to 10 per cent over the corresponding period last year. The production of coal and coke mines in Illinois, Indiana and Iowa is averaging 2,500,000 tons per week, with no indication of any material increase during the next three months. Increased activity is anticipated in the corn products industry, and for other grain products it is estimated that the movement for the next three months will be fully up to that of the first three months of 1925, with indications of an increase of as much as 25 per cent in some sections.

Indications point to a larger movement of cattle to market during the next three months than in the corresponding period of 1925. The livestock committee suggested the desirability of creating, through the Mid-West Shippers' Regional Advisory Board, a means whereby stock shippers in the mid-west might be fully informed in advance as to the movement of livestock to the various markets in order that gluts might be avoided. A similar plan has already been instituted covering Denver, Colo., in the Central Western Shippers' Regional Advisory Board territory, and it is reported that this plan added not less than $500,000 to the gross receipts of livestock shippers in the fall of 1925 by entirely eliminating market gluts.

Commission and Court News

State Commissions

Competing Bus Line Refused Certificate

The Wyoming Public Service Commission denied the application of the Wyoming Transportation Company for a certificate of convenience and necessity to operate a motor passenger transportation system as a public utility between Casper and the state line which would parallel the lines of the Chicago & North Western, the Colorado & Southern and the C. B. & Q. The success of the venture depended almost wholly on the patronage of traveling salesmen, and the testimony as to their use of the bus instead of private automobiles was contradictory. The effect of granting the certificate might result in curtailment of train, mail and express service to communities served by the railways and not on the highway. The commission said: "To authorize a competitive utility to enter this field, which, as shown by the record, would deprive the existing utilities of needed revenues without promoting the convenience and necessity of the general public, would not be in conformity with the meaning and intent of our Public Utilities Act."

Personnel of Commissions

Richard V. Taylor, whose appointment as a member of the Interstate Commerce Commission was confirmed by the Senate on January 13, took the oath of office on the same day.

United States Supreme Court

Coupling Operation Under Safety Appliance Act

Suit in a Minnesota court brought under the Safety Appliance Act of 1893, as amended in 1903, resulted in judgment for plaintiff, affirmed by the state Supreme Court (159 Minn. 41). The freight train on which plaintiff was rear brakeman broke in two at night on a narrow wooden bridge, the two sections stopping a few feet apart. The break was caused by a defective coupler, several bolts of the carrier iron of which were missing, and the nut had come off the bolt holding up one of the ends, causing the coupler to drop down and become no longer interlocked. Plaintiff tried to get the carrier iron back in place by pulling it into a right angled position and placing wooden wedges between it and the drawbar. In doing so the carrier iron, which had at first caught when he pulled it, "came easy," causing his right foot to drop down between the ties, and, losing his balance, he fell backwards over the side of the bridge to the ground below, sustaining serious injuries.

The railroad company contended that the defective car, being motionless at the time, was not then in use, and the Safety Appliance Act did not apply; and that plaintiff was not engaged in a coupling operation or car movement, but was doing repair work, which was permitted by the Supplemental Safety Appliance Act of 1910.

The Supreme Court of the United States holds that the defective car was still in use, and that plaintiff was not engaged in repair work, but in coupling the cars. The fact that he testified that it became his duty to "repair" the coupler to get the train going did not, it was held, transform the coupling operation into repair work.

The court said: "As there was substantial evidence tending to show that the defective coupler was a proximate cause of the accident resulting in the injury to Goneau while he was engaged in making a coupling in the discharge of his duty, the case was rightly submitted to the jury under the Safety Appliance Act; and the issues having been determined by the jury in his favor, the judgment of the trial court was properly affirmed." —M. St. P. & S. S. M. v. Goneau. Decided January 4, 1926. Opinion by Mr. Justice Sanford.

Foreign Railway News

Safety on British Railways

But one passenger was killed in a train accident in Great Britain in 1925; this in a country which excels both in speed of trains and density of traffic. The statement in the press despatch, that this is an unparalleled record is not quite correct, for the railroads of Great Britain have done even better than this in former years. In 1901 and again in 1908 they were able to report *none* killed; and in both these cases the records were clear of fatalities under this head for a total period of 15 months or more. The records before the war included Ireland, also. The total number of passengers carried in those years was about 1,500 millions in each 12 months.

Mexican Train Bandits Kill Fifty Passengers

Approximately 50 passengers on a Guadalajara-Mexico City train were killed on January 9 by bandits who held up the train in the State of Michoacan. The bandits boarded the train at a way station, locked the doors of the cars and systematically knifed or shot the train crew and passengers, robbing them as they proceeded. Several cars of the train were set fire to and burned so that the exact number of victims cannot be definitely known. After having robbed the passengers the bandits uncoupled the locomotive and express cars and ran them down the track several miles where these cars were looted. Troops were dispatched to pursue the bandits as soon as their depredations were made known and a number were apprehended and summarily executed.

Gasoline Rail Motor Cars on Algerian Railways

The Chemin de Fer sur Routes en Algerie (C. F. R. A.), a state-subsidized railway, has put into service on one of its suburban lines two gasoline rail motor cars, according to Vice-Consul Williamson at Algiers.

The larger of the two cars has a 58 hp. Renault-Scémia motor placed in front of the car and acting on two axles. The car is divided into one compartment for first-class and one for second-class passengers and has baggage racks on top. With two trailers in tow it carries 52 passengers and attains a speed of 33 miles per hour.

The other car is equipped with a De Dion motor of 35 hp., which acts on one axle. Baggage is carried on the roof. With one trailer it can carry 44 passengers and attain a speed of 33 miles per hour. This equipment costs 85,000 paper francs. If these two cars prove as economical and effective as hoped, it will result in the purchase of a considerable number of vehicles of similar type.

Argentine State Railway Situation

In a recent report of the Administrator of the State Railways to the Ministry of Public Works of Argentina, attention is called to the purchases made and funds expended by the former administration, without authorization, amounting to 115,093,903 pesos (paper), according to Commercial Attaché Feely at Buenos Aires. The itemized list of unauthorized expenditures is as follows (the peso, at date, being worth $0.413):

	Paper pesos
Construction of lines and branches, surveys, etc.	38,046,965.93
Reconstruction of cars, coaches and locomotives	19,796,607.17
Improvement, equipment, etc., for lines in operation	17,755,752.61
Material for construction work	19,994,609.18
Material for maintenance	10,766,328.02
Interest chargeable to construction work	5,100,642.56
Interest chargeable to operation account	8,875,301.66
Expenses occasioned by Strikes	977,609.04
Total (gross)	121,313,816.17
Deduction of difference between surplus from construction work and amount authorized therefor	6,219,912.92
Total (net)	115,093,903.25

The situation of the State Railways has become so serious that the State Railways bill is expected to be placed on the agenda for consideration at the extra sessions of Congress convened in November. The floating indebtedness of 183,000,000 pesos is be-

ing carried in rediscounted notes by the Banco de la Nacion; as liquid funds will soon be urgently needed to meet the demands of crop movement, the consolidation of this indebtedness is one of the most urgent problems of the administration.

Meanwhile, the Administrator of the State Railways has requested an extraordinary credit of 2,970,000 pesos to be used in the purchase of materials and rolling stock, and for other work. Among the purchases for which funds are requested is that of 20 locomotives at an estimated cost of 2,000,000 pesos (paper).

The number of locomotives in use at present on the Argentine Northern Central is 583, of which 462 are actually in use; 107 are under repair, 8 are being used for switching, and 4 have been loaned to individuals. The purchase of 20 new locomotives would make it possible to discard 40 locomotives of antiquated design.

France to Operate Luxemburg Railways

The Chamber of Deputies of the Grand Duchy of Luxemburg has ratified the *modus vivendi* providing for operation of the Guillaume-Luxemburg Railways by the Alsace-Lorraine Railway Administration, according to Ambassador Phillips at Brussels. The agreement was signed October 9 and went into effect November 10.

This act of ratification brings to an end, at least for the present, the anomalous situation which has hitherto prevailed—that is, the French operation of the railway without an understanding as to terms, duration, or even authority so to act. The railroad question has been a constant source of difficulties for successive ministries and was the cause of the fall of the Reuter government. That government had reached an agreement with Belgium for the unification of the two Luxemburg lines and the Belgian State Railways, but the Chamber of Deputies refused to ratify the accord and forced the resignation of the ministers.

Although the *modus vivendi* has been sanctioned, it is not regarded favorably by all the political groups, and, according to the Luxemburger Wort, it is acceptable only so far as it incorporates a few of the provisions of the Reuter agreement. The article asserts that the temporary character of the agreement is a positive advantage to the French, but not a corresponding benefit to Luxemburg. It is said that the provision for denunciation after six months' notice makes it possible for France to withdraw, should the administration become a burden, but that Luxemburg can not withdraw as she has no alternative to French operation.

It is pointed out that the fixed sum of 1,000,000 paper francs at their present depreciated value, to be paid by the French administration, does not compare favorably with the 250,000 francs at par value paid by Germany before the war. Furthermore, Luxemburg is responsible for the inspection and surveillance of the lines but is paid for this service only 150 francs per kilometer, or approximately 30,000 francs total, whereas that sum will hardly meet the salary of the chief inspector. Many other objections are raised, but the examples given are typical.

Miscellaneous

The Department of Commerce has received the following reports from its agents in various parts of the world:

The Ferrocarril del Nordeste of Colombia will be completed by July 20 as far as Tunja, according to its superintendent. This railroad is being built by the Belgian Société Nationale de Chemins de Fer for the Colombian government.

Nationalization of all Cuban railways is proposed in a bill introduced in the present session of Congress. Provisions are made for the reduction of freight rates on minor commodities to encourage the production of crops other than sugar and tobacco. However, there appears to be little possibility of the adoption of the nationalization plan at present.

French railroads are seeking rate increases as a result of the deficit of 700,000,000 francs, plus 215,000,000 francs, capital charges for the payment of interest on foreign loans, shown for the current year. It is proposed: To increase uniformly to 190 per cent the fares for all classes of passenger traffic; to increase by 25 per cent the basic rates on the first and second series of merchandise shipments, express and excess baggage; to increase by 30 points the rate increases now applicable to freight shipments; and to apply the same increase to workers' tickets as to other passenger traffic, and to increase the basic rate on parcel post shipments by 25 per cent. The total increased revenue thus provided for is placed at 840,000,000 francs.

Equipment and Supplies

Locomotives

THE WESTERN PACIFIC has ordered five Mikado type locomotives from the American Locomotive Company.

THE ILLINOIS TERMINAL COMPANY has ordered one 6-wheel switching locomotive from the Baldwin Locomotive Works.

THE NORFOLK SOUTHERN has ordered five Consolidation type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of November 21.

THE PENNSYLVANIA RAILROAD has ordered 100 locomotive tenders from the Baldwin Locomotive Works. These tenders will have 13,000-gal. capacity and will be used on long, heavy runs, where greater tender capacity is necessary.

THE GULF, MOBILE & NORTHERN did not order 5 Mikado type and 4 Pacific type locomotives from the Baldwin Locomotive Works as was reported in the *Railway Age* of January 9. An officer advises us that the company did not order any locomotives and does not contemplate purchasing any additional power.

THE NEW YORK, NEW HAVEN & HARTFORD'S order for 5 electric passenger locomotives and 3 electric switching locomotives was let to the Westinghouse Electric & Manufacturing Company and the Baldwin Locomotive Works. This order was incorrectly reported in the *Railway Age* of January 16 as having been placed with the General Electric Company.

Freight Cars

THE WABASH has ordered 10 automobile box cars from the American Car & Foundry Company.

THE ATLANTA, BIRMINGHAM & ATLANTIC has given a contract for rebuilding 100 flat cars to the Virginia Bridge & Iron Company.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 500 box cars from the Pullman Car & Manufacturing Corporation.

THE NORTHWESTERN REFRIGERATOR CAR COMPANY has ordered 325 steel underframes from the American Car & Foundry Company.

THE NORTHERN REFRIGERATOR CAR COMPANY has ordered 500 refrigerator cars from the Pullman Car & Manufacturing Corporation.

THE INDEPENDENT OIL & REFINING COMPANY, Tulsa, Okla., has ordered 50 tank cars of 8,000-gal. capacity, from the Pennsylvania Car Company.

THE PHILLIPS PETROLEUM COMPANY, Bartlesville, Okla., has ordered 100 insulated 8,000-gal. capacity tank cars from the Standard Tank Car Company.

THE ROXANA PETROLEUM CORPORATION, St. Louis, Mo., is inquiring for 250 tank cars of 8,000-gal. capacity and 250 tank cars of 10,000-gal. capacity.

THE IMPERVIOUS VARNISH COMPANY, Pittsburgh, Pa., has ordered one double compartment 8,000-gal. capacity tank car from the Standard Tank Car Company.

THE SEABOARD AIR LINE is inquiring for 1,000 gondolas of 50-tons' capacity and 1,000 box cars of 40-tons' capacity and will probably buy from 3,000 to 3,500 cars.

THE FRUIT GROWERS EXPRESS has ordered 300 underframes from the Ryan Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 9.

THE JONES & LAUGHLIN STEEL CORPORATION, Pittsburgh, Pa., has ordered nine 20,000-gal. capacity, seven 10,000-gal. capacity

and three 8,000-gal. capacity tank cars from the Standard Tank Car Company. This company was reported in the *Railway Age* of January 9 as inquiring for 16 tank cars.

THE INDEPENDENT OIL & GAS COMPANY, Tulsa, Okla., has ordered three triple compartment and three double compartment 8,000-gal. capacity tank cars from the Standard Tank Car Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 1,000 box cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 9.

THE ROYAL STATE RAILWAY DEPARTMENT OF SIAM.—Bids will be received by Purachatra, Commissioner-General, Bangkok, Siam, up to 14 o'clock, March 29, for the supply of all steel goods wagons, B. E. 2469. Specifications and plans may be obtained from C. P. Sandberg, 100 Broadway, New York.

THE CHICAGO & NORTH WESTERN has ordered 250 underframes from the Ryan Car Company. This company has also ordered 225 freight car superstructures from the General American Car Company, 225 from the Illinois Car & Manufacturing Co., and 150 ore cars from the Pullman Car & Manufacturing Corporation.

Passenger Cars

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered two parlor cars from the Pullman Car & Manufacturing Corporation.

THE CHICAGO & ALTON has ordered two power units for equipping one combination baggage and passenger motor car from the Railway Motors Corporation.

THE DULUTH & IRON RANGE has ordered two power units for equipping one combination baggage and passenger motor car from the Railway Motors Corporation.

THE ST. LOUIS-SAN FRANCISCO has ordered two power units for equipping one combination baggage and passenger motor car from the Railway Motors Corporation.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 40 milk cars from the Osgood-Bradley Car Company. Inquiry for this equipment was reported in the *Railway Age* of December 26.

THE CHICAGO, BURLINGTON & QUINCY has ordered 25 underframes for passenger cars from the Bettendorf Company. Inquiry for this equipment was reported in the *Railway Age* of January 9.

THE DULUTH, MISSABE & NORTHERN has ordered two power units for equipping one combination baggage and passenger motor car and two power units for equipping one passenger motor car from the Railway Motors Corporation.

Iron and Steel

THE SOUTHERN PACIFIC has ordered 10,000 tons of rails from the Tennessee Coal, Iron & Railroad Co.

THE FLORIDA EAST COAST has ordered 2,200 tons of steel for shops at St. Augustine, Fla., from the Virginia Bridge & Iron Co.

THE LEHIGH VALLEY has ordered 350 tons of bridge steel from the American Bridge Company and 750 tons from the Bethlehem Steel Company.

THE CHICAGO, BURLINGTON & QUINCY is expected to enter the market soon for approximately 7,000 tons of tie plates and 3,000 tons of splice bars.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE is expected to enter the market soon for approximately 10,000 tons of 110-lb. rail and 5,000 tons of tie plates.

THE MISSOURI-KANSAS-TEXAS has ordered 5,500 tons of rails from the Tennessee Coal, Iron & Railroad Co., and has divided an order for 4,500 tons of rails between the Illinois Steel Company and the Inland Steel Company.

Machinery and Tools

THE ILLINOIS CENTRAL has issued an inquiry for 150 machine tools.

THE ERIE has ordered one 50-ton coach hoist from the Whiting Corporation.

THE NORTHERN PACIFIC has ordered one jib crane from the American Hoist & Derrick Co.

THE BALTIMORE & OHIO has ordered a car wheel lathe from the Niles-Bement-Pond Company.

THE MISSOURI PACIFIC has ordered one standard ditcher from the American Hoist & Derrick Co.

THE QUANAH, ACME & PACIFIC has ordered one 36-in. Snyder drill from Manning, Maxwell & Moore, Inc.

THE NEW YORK CENTRAL has ordered two 48-in. car wheel borers from the Niles-Bement-Pond Company.

THE GREAT NORTHERN has ordered three locomotive cranes from the American Hoist & Derrick Company.

THE DELAWARE, LACKAWANNA & WESTERN has ordered one shaper from Manning, Maxwell & Moore, Inc.

THE GREAT NORTHERN, which was reported to be inquiring for 18 machine tools, has increased its inquiry to 25.

THE PULLMAN CAR & MANUFACTURING CORPORATION has ordered a die sinking machine from the Niles-Bement-Pond Company.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered a 30-in. by 18-ft. lathe and a 16-in. gear head lathe, from the Niles-Bement-Pond Company.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered a 20-ton, 70-ft. span crane and a 30-ton, 37-ft. span crane from the Niles-Bement-Pond Company.

THE CENTRAL OF GEORGIA is asking for bids until January 28 on about 30 motor-driven tools, to include a turret lathe, double spindle centering machines, portable lathes, piston rod grinder, stamping press, slotting machines, heavy duty lathes, slab milling machine, shaper and radial drill press.

Signaling

THE BALTIMORE & OHIO has ordered from the Union Switch & Signal Company 242 color-position-light ground and bracket signals and 44 color-position-light dwarf signals for installation on the Chicago Division.

THE LOUISVILLE & NASHVILLE has ordered from the Union Switch & Signal Company a Style "S-8" electro-mechanical interlocking machine for installation at Pearl River, La., and installed by the railroad company's signal construction forces.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company a Style "P-5" electro-mechanical interlocking, having 14 electric units and 9 spare spaces, and a 12-lever mechanical frame, for installation at "MC" Tower, Monongahela City, Pa.

Passenger Cars Ordered, Installed, Retired

Quarter	Domestic orders reported during quarter	No. installed during quarter	No. retired from service during quarter	No. owned or leased at end of quarter	No. under order or being constructed
Full year, 1924...	2,554*	2,824	2,376	.....	...
1925					
January-March ...	279	609	589	54,594	773
April-June	160	690	644	54,658	498
July-September ...	408	664	736	54,562	901
October-December..	768	...	...	.....	...
Full year, 1925*..	2,191*	...	...	.....	...

(1) Details as to orders from *Railway Age* weekly reports. Figures include all domestic orders placed with builders and railroad shops.
(2) Figures in remaining columns from Car Service Division, A. R. A. quarterly report of passenger cars, Form C. S. 55 A. Figures cover only Class I roads reporting to Car Service Division and are not therefore strictly comparable with figures given in first two columns of table.
* Corrected figures.

Supply Trade News

The Chicago Bridge & Iron Works will build a 100-ft. by 450-ft. addition to its plant at Greenville, Pa.

The Bates Expanded Steel Truss Company, Chicago, has moved its general offices to its new office building at East Chicago, Ind.

The Browning Crane Company, Cleveland, O., has opened an office at 1201 Peoples Bank building, Pittsburgh, Pa., in charge of **D. C. Harris.**

The Pittsburgh Testing Laboratory has removed its Chicago office from 53 West Jackson Boulevard to the Old Colony building, 37 West Van Buren street.

J. B. Marks, assistant to the president of the **Colorado Fuel & Iron Company,** also has been elected vice-president in charge of sales, traffic and purchases.

The Harnischfeger Sales Corporation, Milwaukee, Wis., has moved its Birmingham, Ala., office from 431 First National Bank building to 401 Pioneer building.

W. W. Sayers, chief engineer of the Philadelphia plant of the **Link Belt Company,** has been appointed chief engineer of the company, with headquarters at Chicago.

The Tool Steel Gear & Pinion Company, Cincinnati, O., has moved its Chicago district office to Room 648 McCormick building. **Walter H. Evans** is district representative.

G. L. Hulben has been added to the sales force of the Chicago branch of the **Ludlum Steel Company.** The general offices and works of this company are at Watervliet, N. Y.

R. M. Chissom, special representative of the Lehon Company, with headquarters in Chicago, has resigned to become manager of railway sales of the **Otley Paint Manufacturing Company,** Chicago.

The Buda Company, Harvey, Ill., has opened an office at 405 Forsyth street, Jacksonville, Fla., and has placed **A. L. Bliss,** formerly representative, with headquarters at Chicago, in charge of the new office.

The F. F. Barber Machinery Company, Ltd., Foy building, 32 Front street, West, Toronto, Ontario, will in future represent the **Geometric Tool Company,** New Haven, Conn., exclusively in the province of Ontario.

Andrew F. McCoole, with office at 2091-2092 Railway Exchange building, St. Louis, Mo., has been appointed railway representative in that territory of the **Murphy Varnish Company,** Newark, N. J., succeeding J. K. Milligan, resigned.

The Paige & Jones Chemical Company, New York, has bought property adjoining its plant at Hammond, Ind., and is building extensive additions that will double the plant capacity and will give combined office space of over 5,000 square feet.

J. H. Bunnell & Co., Incorporated, New York City, one of the oldest American manufacturers of telegraph and other electrical apparatus has passed into the hands of **J. J. Raftery** and **J. G. Dougherty.** Mr. Raftery is president. **J. J. Ghegan,** the retiring president, retains an interest in the business.

The Mechanical Manufacturing Company, Chicago, has opened an office at 323-E Hudson Terminal building, 30 Church street, New York. **J. A. Keating,** representative, with headquarters at Chicago, will be in charge. **H. E. Johnson,** representative at Chicago, has been transferred to the eastern office.

The Nazel Engineering & Machine Works, Philadelphia, has purchased from the T. C. Dill Machine Company all rights and titles to the Dill slotter and will manufacture it in connection with the Nazel air hammer. **Robert Miller,** long associated with the Dill Company as superintendent, will join the Nazel organization.

The Southern Wheel Company, Pittsburgh, Pa, has opened a new office in the Munsey building, Washington, D. C., in charge of **S. C. Watkins,** special representative, who was formerly located at Atlanta, Ga. The Atlanta office in the Candler building is now in charge of **C. C. Cox,** representative.

C. D. Foltz, representative of the **Westinghouse Air Brake Company** in charge of the Denver and Salt Lake City offices, has been appointed assistant western manager of the Air Brake Company, with headquarters at Chicago. Mr. Foltz began railway work at the age of 15 as a telegraph operator on the Wabash. Subsequently he served on various western roads consecutively as fireman, engineman and traveling engineer. In 1910 he went to the Westinghouse Company as an inspector in Salt Lake City, later becoming mechanical expert and representative of that office and subsequently also of the Denver office. His headquarters since 1923 have been at Denver.

W. J. Foster, assistant engineer in the alternating current engineering department of the **General Electric Company,** Schenectady, N. Y., since 1892, has been made a consulting engineer of the department. He will be available also in a consulting capacity to other engineering departments, as well as commercial departments. **Earl S. Henningsen** and **P. L. Alger** have been made assistant engineers of the alternating current engineering department. Mr. Henningsen will devote his attentions primarily to the administrative and mechanical problems, and will have administrative charge of the department in the absence of H. G. Reist, engineer in charge. Mr. Alger will have general responsibility for electrical designs and investigations.

Ernest Wooler, automotive engineer of the **Timken Roller Bearing Company,** Canton, Ohio, has been appointed chief engineer in charge of all automotive, industrial, experimental and service engineering. **J. W. Spray,** district manager at Detroit, has been appointed manager of sales, automotive division, with headquarters at Detroit. **E. W. Austin,** district manager at Cleveland, has been appointed assistant manager of sales, automotive division. No change will be made in Mr. Austin's territory and sales work in the eastern territory will be under his direction. **R. W. Ballentine,** district manager in Milwaukee, has been appointed an assistant manager of sales, automotive division. **Peter C. Poss** of the advertising department of the Timken Company at Canton has been made assistant advertising manager.

J. Howard Horn, sales manager of the **National Lock Washer Company,** Newark, N. J., has been elected general sales manager, with headquarters at Newark. Mr. Horn was educated at the Newark Academy and later at Princeton University, from which he received a B.S. degree of 1907. He served with the Rogers Works of the American Locomotive Company's plant at Paterson, N. J., as special apprentice and later at the Cooke Works of the same company and in the same capacity. In 1909, he served an apprenticeship in the car shop of the Public Service Railway Company, Newark, N. J. In January, 1910, he entered the sales department of the National Lock Washer Company at Newark, and has been in the continuous service of that company since. He was promoted to sales manager in 1917, which position he held at the time of his recent election to general sales manager, as above noted.

American Company Incorporated to Manufacture and Sell Holzwarth Gas and Oil Turbines

The Holzwarth Gas Turbine Company of America, recently incorporated in Delaware, has acquired the patents and rights to manufacture and sell in the United States and Canada the Holzwarth gas and oil turbines which have been developed and built by Thyssen & Company, Mulheim-Ruhr, Germany, and which possess thermal efficiencies comparable with existing prime movers.

Hans Holzwarth, inventor of the turbine and former chief engineer of the Thyssen Works, is vice-president and engineering director of the American company. The offices of the American

company are located at 504 Standard Oil building, San Francisco, Cal., and its European address is care of Thyssen & Company, Mulheim-Ruhr, Germany.

The American company has negotiated certain contracts with the Thyssen firm in Germany and prolonged tests under commercial conditions are to be run on a 5,000 kilowatt gas turbine and small oil turbine at the Thyssen Works in the near future. Invitations to witness these tests have been extended by the American company to a number of engineers, manufacturers and power-producers in the United States and in other countries.

Car Builders Rewarded for Suggestions for Improvements

Under the plan of employee representation in the shops of the Pullman Car & Manufacturing Corporation, awards have been made to individuals for suggestions for improvements found worthy of adoption. In the central toolroom an employee suggested a device for reclaiming sockets for drills, a device for re-bushing air hammer cylinders, and a device for holding broken drills, permitting their further use. The suggestions of an employee in the cabinet department for a device for holding drills that have been broken, permitting their further use, was also adopted. In the passenger steel erecting department an award was made for the suggestion that outside body end sheet, step riser channel, door header and platform plates be applied while the underframe is lined up for riveting in the passenger steel erecting department. An award was made in the steel cabinet department for an improved method of assembling section partitions. Other suggestions which were adopted included a device for an improved dust cap for electric reamers, a modification in double berth latch bolt manufacture, the suggestion that the cold chisel be rounded off half oval for use in cutting off screws on partitions and a suggestion for the use of two whistle valves of the poppet type in place of a three-way valve on overhead reamers.

Locomotive Shipments in 1925

The Department of Commerce has prepared the following tabulation of locomotive shipments from principal manufacturing plants for each month of 1924 and 1925:

RAILROAD LOCOMOTIVES

Year and month	Shipments			Unfilled orders end of month		
	Total	Domestic	Foreign	Total	Domestic	Foreign
1924						
January	151	147	4	376	344	32
February	99	92	7	499	466	33
March	132	128	4	534	494	40
April	73	63	10	640	586	54
May	111	93	18	643	589	54
June	145	134	11	531	462	69
July	140	130	10	483	416	67
August	139	121	18	361	306	55
September	104	79	25	386	333	53
October	96	78	18	462	398	64
November	133	123	10	397	331	66
December	142	132	10	431	358	73
Total (12 mos.)	1,465	1,320	145	...	...	...
1925						
January	90	45	45	407	351	56
February	85	73	12	397	343	54
March	109	93	16	447	351	96
April	92	82	10	477	362	115
May	96	68	28	467	353	114
June	110	61	49	397	300	97
July	66	58	8	378	283	95
August	104	91	13	309	225	84
September	94	50	44	363	296	67
October	79	54	25	497	397	100
November	98	52	46	548	448	100
December	104	86	18	763	628	135
Total (12 mos.)	1,127	813	314	...	...	...

Obituary

Charles E. McFarlan, president of the Wm. Powell Company, Cincinnati, Ohio, died on January 1.

Carter Miller, assistant advertising manager of the Timken Roller Bearing Company, Canton, Ohio, died suddenly of pleural pneumonia on January 11.

Frank C. Webb, representative of the Railroad Supply Company, Chicago, with headquarters at Denver, Colo., and at one time a division superintendent on the Colorado & Southern and on the Great Northern, died at Denver on January 12.

Trade Publications

COMBINED ENGINE COALER AND CINDER PLANT.—The Roberts & Schaefer Company, Chicago, has issued a folder which illustrates and describes the "N. & W." type engine coaling and cinder plant. Facing pages on the inside of the folder show a reproduction of a general drawing of the equipment, as well as a list of ten advantages of this type of plant, while the fourth page gives a detailed description.

REMOVING SNOW.—The Hayward Company, New York, has issued a folder with the title "Making Short Work of Tall Snow Piles," which shows by text and photograph how Hayward clam shell buckets are used to clean up snow in city streets, picking up the snow from piles at the curb line and loading motor trucks. One page is devoted to an account of the use of a locomotive crane equipped with a Hayward orange-peel bucket for cleaning up accumulations of snow on railway tracks.

INDUSTRIAL CONTROL CATALOGUE.—An industrial control catalogue of 160 pages has been issued by the General Electric Company, Schenectady, N. Y., furnishing information on its representative lines of industrial control and including a reprint of the industrial control section of its general catalogue. It also contains instructive matter on the care and operation of control devices, wiring diagrams of some standard controllers, push buttons and other accessories, reference tables, lists of publications, and other useful information.

AN ADMIXTURE FOR CONCRETE.—In bulletin No. 314 of 12 pages the Celite Products Company, Los Angeles, presents a discussion of the properties of Celite (diatomaceous silica) and the results secured by using it as an admixture for concrete. The subject matter is presented substantially in the form of a technical article covering the chemical and physical properties of the material and its behavior when used in concrete with individual references to its application in various types of structures. Numerous half-tones illustrate its application in bridges, buildings, reservoirs, etc.

BOILER TUBES.—The first half of Catalogue BT, issued by the Bethlehem Steel Company, Bethlehem, Pa., describes and illustrates the old-fashioned hand knobbling process for making pure charcoal iron for boiler tubes and gives a brief history of iron making and its connection with charcoal iron boiler tubes. The second half of the catalogue is devoted to the testing, inspection, weights and list prices of Bethlehem charcoal tubes, and covers the specifications for lap welded charcoal iron boiler tubes as issued by the American Society for Testing Materials, the American Society of Mechanical Engineers, and the American Railway Association, also the general rules and regulations prescribed by the Board of Supervising Inspectors.

STEEL BUILDING STANDARDS AND SPECIFICATIONS.—The American Institute of Steel Construction, Cleveland, Ohio, has issued a bulletin of 64 pages of data and specifications of value to designers of steel buildings. The last 35 pages comprise specifications for the design, fabrication and erection of structural steel buildings, these specifications having been prepared by a committee of engineers selected to carry out this work for the institute. The first 28 pages contain material in explanation of or supplementary to the specifications, including rivet tables, column diagrams and explanations of the charts, tables and formulas. Among the most interesting features of the bulletin is a discussion of columns, which includes a list of some 28 column formulas, together with a diagram which affords an unusual opportunity for comparison of these formulas.

FLOODLIGHTING PROJECTORS is the title of Bulletin No. 216 recently issued by the Electric Service Supplies Company of Philadelphia. The bulletin contains 72 pages and is well illustrated with photographs and drawings in which applications of the Golden Glow and Crystal Mirror reflectors are described in detail. All of the various kinds of flood lighting equipment manufactured by the company are shown and complete information as regards type, dimensions and prices are furnished. The first part of the bulletin is devoted to a discussion of the subject of flood lighting in general and several illustrations are given, showing the application of this method of lighting to railroad yards. Flood lighting performance curves are given, showing the different results obtained with various lighting units, reflectos, mounting heights, and the like.

Railway Construction

BALTIMORE & OHIO.—An agreement has been reached between this company and the State Highway Commission of Indiana for the separation of grades at Blocher, Ind., whereby the cost will be divided between the commission and the railroad. The estimated cost of the construction is $36,000.

CAMBRIA & INDIANA.—The Interstate Commerce Commission has further extended until July 1, 1926, the time when this company must begin the construction of its 5-mile extension in Cambria county, Pa., noted in the *Railway Age* of February 21, 1925. The work must be completed by June 30, 1927.

CHICAGO & NORTH WESTERN.—The 1926 budget for expenditures amounting to $20,000,000 includes $3,000,000 for yard improvements, $5,000,000 for rail and track materials, $2,000,000 for equipment, and the remainder will be distributed over extensions, track ballast, machinery and tools.

CHICAGO & NORTH WESTERN.—Plans have been prepared for the construction of 30 additional tracks with capacity of three thousand cars at Proviso Yard near Chicago at a cost of $2,000,000. The project will include construction of a subway for passage of street under yard. Plans have been prepared for the construction of a water treating plant at Norfolk, Neb., to cost $20,000.

CHICAGO, BURLINGTON & QUINCY.—Company forces will rebuild a 100-ft. steel span bridge on concrete piers over the Platte river near Fremont, Neb., at a cost of $25,000. Plans have been prepared for the construction of a locomotive repair shop and an addition to the enginehouse at South Sioux City, Neb., to cost $90,000.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Bids are being taken for the construction of an extension to the engine terminal facilities at Kankakee, Ill., to cost approximately $253,000. Included in the project are an extension to the roundhouse and a brick service building.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—No decision has been made regarding the construction of a second track on the Sandusky division, including that part of the line between Bellefontaine, Ohio, and Kenton. Eventual construction of a second track is being considered, however, as reported in the *Railway Age* of January 9.

FLORIDA EAST COAST.—A contract has been awarded to the John A. Kelley Company, Philadelphia, for grading in connection with additional trackage from Gomez, Fla., to Jupiter (8 miles), and to the C. R. Cummins Company, Cleveland, Ohio, for similar work from Sebastian to Indrio (22 miles). A contract has been awarded to the Charleston Engineering & Contracting Company, Charleston, S. C., for the construction of a number of ballast deck trestles between Sebastian and Indrio.

GREAT NORTHERN.—Plans are being prepared for the construction of a passenger terminal at Glacier Park, Mont., to cost $100,000.

JACKSON & EASTERN.—The Interstate Commerce Commission has extended to December 31, 1926, the time when this company must complete its extension from Sebastopol, Miss., to Jackson (61 miles). This is the third supplemental order issued by the commission extending the time when this work should be completed.

NEW YORK CENTRAL.—This company has reached an agreement with the city authorities of Buffalo, N. Y., whereby it will begin work shortly on a new terminal station in that city.

PENNSYLVANIA.—This company and the State Highway Commission of Indiana have each agreed to share half the cost of reconstructing a bridge carrying State Highway No. 3 over the company's tracks at Eagles, Ind., estimated to cost $12,000.

PENNSYLVANIA.—This company will proceed with the elevation of its Twenty-fifth street line in South Philadelphia, Pa., from the end of the work now under way, near Washington avenue, to the south end of the viaduct at Passyunk avenue. This construction work is one phase of the improvement program in South Philadelphia, which involves abolition of grade crossings, relocation, extension and elevation of lines of the Pennsylvania and the Baltimore & Ohio in the district south of Christian street and between the Schuylkill and Delaware rivers. Bids on the viaduct will be asked for as soon as the detailed plans are completed. Construction work will be started early in the spring. Completion of the viaduct will require a total expenditure in excess of $3,000,000.

ST. LOUIS-SAN FRANCISCO.—The 1926 budget includes $1,604,000 for concrete pipe, arches and culverts; $157,000 for viaducts, subways, grade crossings and crossing signals; $359,000 for the installation of train control devices between Afton, Okla., and Monett, Mo., a distance of 66 miles, and for the installation of interlocking towers at seven locations; $1,363,000 for yard sidings, passing and other trackage; $210,000 for shop buildings; $592,000 for freight and passenger depots; $2,405,000 for new rail and fastenings; $215,000 for water stations, and $109,000 for changes in grade and alignment between St. Louis, Mo., and Springfield.

ST. LOUIS SOUTHWESTERN.—Expenditures amounting to $5,000,000 are planned during 1926. These include an appropriation of $1,300,000 for new rail, $300,000 for track ballasting, $300,000 for shop machinery and tools, $250,000 for new yard tracks, $450,000 for bridges, trestles and culverts, $250,000 for shops and roundhouses, and $350,000 for tie plates and track anchors.

SOUTHERN PACIFIC.—The 1926 improvement program calls for the expenditure of $2,000,000 at Fresno, Cal. The yards will be moved to a new site, recently purchased, two miles north of Fresno. Classification yards, an icing plant and increased shop facilities are included in the program. During the year $15,000,000 will also be spent on the line from Picacho, Ariz., to Casaba and from Hassayampa to Dome.

TREMONT & GULF.—This company has applied to the Interstate Commerce Commission for a certificate authorizing an extension from Denkman, La., to La Salle Parish, 4 miles.

UNION PACIFIC.—In connection with the application for permission to make permanent use of the Southern Pacific passenger station at Los Angeles, Cal., permission has been requested to construct a double track bridge across the Los Angeles river near Seventh street, and a double track viaduct across East Seventh street.

WACO, BEAUMONT, TRINITY & SABINE.—The Interstate Commerce Commission has reopened for hearing the application of this road for authority to build certain extensions in the vicinity of Beaumont, Tex., reported in the *Railway Age* of March 14, 1925.

WENATCHEE SOUTHERN.—The Interstate Commerce Commission has extended to July 1, 1926, the time when this company must begin the construction of some 82 miles of line in the state of Washington, and to June 30, 1928, the time when construction must be completed. Under the original grant of authority construction was to have started prior to January 1, 1925. This was later extended to January 1, 1926, and is now advanced another six months.

THE DEPARTMENT OF COMMERCE has received the following reports from its agents in various parts of the world:

Seventeen locomotives for Prague and vicinity have been ordered—three passenger and two station locomotives to be delivered by the Skoda Works, 2 passenger locomotives by Krizik; 4 freight and one passenger locomotives by the Cesko-Moravska Kolben; and two station locomotives by the Adam Machinery Company.

A reduction in passenger rates on the Norwegian State Railways has been decided on. The minimum price for third class tickets has been cut from 50 to 30 ore, and second class from 85 to 60 ore on ordinary trains. Charges for sleepers have been put back to what they were prior to the increases which became effective during 1924.

The Chilean State Railway budget for 1926 shows that ordinary and extraordinary expenditures have reached the sum of 256,615,432 paper pesos, and receipts only 246,083,990 paper pesos, leaving a deficit of slightly more than 10,000,000 paper pesos.

Railway Financial News

AKRON, CANTON & YOUNGSTOWN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $800,000 of general and refunding mortgage bonds.

ARIZONA EASTERN.—*Bonds.*—The Interstate Commerce Commission has granted authority to this company to issue $13,077,000 first and refunding mortgage bonds paying 5 per cent to be sold at par. The bonds will be dated May 2, 1910, and mature May 1, 1950. They may be called on any interest date at 105. All of the stock of this company is owned by the Southern Pacific. Of the proceeds of the new issue, $3,014,737 is to be used to capitalize expenditures previously made, and $10,062,997 is to be used for new construction, etc., in connection with the Southern Pacific's plans in Arizona following upon the acquisition of the El Paso & Southwestern. It was proposed to sell the bonds to the Southern Pacific at 87.25 per cent of par. The commission in this connection stated:

> The sale of the bonds of the Southern Pacific Company on the basis proposed would result in a substantial discount being suffered by the applicant. The rental payable under the lease aforesaid does not provide for the payment by the lessee of amounts sufficient to cover the discount which the applicant might sustain in the sale of its securities. Therefore, the applicant would not have any income available for the amortization of the discount on these bonds. The Southern Pacific Company as lessee, will receive all revenues accruing from the operation of the lines of the applicant and as it will not pay as rental any amount which may be applied by the applicant to the discount on its securities, we will authorize the sale of the bonds to the Southern Pacific Company at not less than par and accrued interest.

BALTIMORE & OHIO.—*Equipment Trusts.*—This company has applied to the Interstate Commerce Commission for authority to issue $8,370,000 4½ per cent equipment trust certificates to be sold at 97 to Kuhn, Loeb & Co., and Speyer & Co. Sale of these certificates to the public was reported in the *Railway Age* of January 16.

BOSTON & MAINE.—*Lease of Line to Canada.*—This company and the Canadian Pacific have filed with the Interstate Commerce Commission a joint application for authority for the Canadian Pacific to acquire by lease the 69-mile line of the Boston & Maine from Wells River, Vt., to the international boundary. The Boston & Maine also proposes to transfer to the Quebec Central the line of the Massawippi Valley, from the boundary to Sherbrooke, Que., which is operated as an extension of the line in the United States, and to cease operating in Canada.

BOSTON & MAINE.—*Massachusetts Authorities Want More Information.*—Henry C. Atwill, chairman of the Massachusetts Department of Public Utilities, has advised Howard W. Brown, counsel of the Boston & Maine, that the department desires more detailed information before it can pass upon the issue of $13,000,000 prior preferred stock proposed to be issued in connection with the reorganization plan. The letter said:

> "This department, before acting upon the application of the Boston & Maine for the issue of $13,000,000 of priority stock, desires more specific information from the railroad as to the purposes to which the proceeds of the sale of the stock are to be devoted. Mr. Loring, in his testimony at the hearing, stated that the proceeds were to be used for the following purposes:
>
> 1.—The improvement of the Boston terminal.
> 2.—Sidetracks.
> 3.—Double-tracking of the Stony Brook Railroad.
> 4.—Consolidation of the railroad between Portsmouth and Portland.
> 5.—The extension of runs of the Santa Fe type engines.
> 6.—Improvements in the Hoosac Tunnel.
> 7.—Ballasting of the railroad.
> 8.—Construction of office buildings.
> 9.—Installation of coal-handling plant at Mystic docks.
> 10.—Improvement of locomotives and purchase of new locomotives.
> 11.—Purchase of gasoline cars.
>
> "He estimated that the cost of the improvements to the Boston terminal would be between six and eight million dollars; that the construction of the office building at Lechmere square would be $450,000; and that the cost of the coal handling plant at Mystic Docks would be $425,000. Outside of this the department has no information as to the cost of the proposed improvements, nor has it any specific information in relation to the cost of the other improvements. We think before passing upon this stock issue we should have more detailed information as to these improvements and the probable cost of the same, in order that we may ourselves pass judgment upon the wisdom of the improvements and the reasonableness of the cost thereof. For instance, we think it ought to be reasonably easy for the railroad to submit to us the proposed plans of the improvements at the Boston terminal and the proposed plans of the double-tracking of the Stony Brook railroad. Again, we think that more specific information could be and should be given by the railroad in relation to the location of the proposed sidetracks. What is true of these three items we think is also true of the remaining eight items referred to."

CHESAPEAKE & OHIO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $10,621,000 of first lien and improvement 20-year 5 per cent mortgage bonds.

CUMBERLAND VALLEY.—*Final Value.*—The Interstate Commerce Commission has issued a final valuation report in which the final value for rate-making purposes of the property owned and used for common-carrier purposes is placed at $13,031,300 as of June 30, 1916, and that of the property used but not owned at $2,548,042.

DENVER & RIO GRANDE.—*Stockholders' Case Against Directors Lost.*—Judge Mullan, in the Supreme Court of New York on January 20, ruled out charges of fraud against the defendant directors in the $200,000,000 suit brought by minority stockholders. The stockholders charged fraudulent intent to destroy the rights of stockholders. Justice Mullan held that the failure of the Denver & Rio Grande directors to pay interest on Western Pacific mortgage bonds which they had guaranteed, was "immoral" but that in the absence of evidence of fraudulent intent, such an act could not be called illegal. He said, "If these directors had done what they are alleged to have done, they would be nothing more or less than pickpockets. After listening to the evidence, I am absolutely convinced that they are not men of that type. There is no evidence sufficient to make out a prima facie case." The defendants were Kingdon Gould, Finley J. Shepard, Arthur Coppell, Edward T. Jeffrey, Benjamin B. McAlpin, Edgar L. Marston, E. D. Adams, Henry Bronner and Charles C. Huitt. The late George J. Gould also was named as a defendant. Alvin W. Krech, chairman of the Equitable Trust Company, and Alexander R. Baldwin, were eliminated by Justice Mullan on Tuesday.

The suit was the result of a series of events beginning with the failure of the Denver & Rio Grande to live up to a contract with the Western Pacific and pay an interest installment on $50,000,000 of Western Pacific first mortgage bonds, due in 1915. Both roads were placed in receivership and the Western Pacific bondholders, after reorganizing the property, secured a judgment against the Denver for $38,000,000.

FAIRPORT, PAINESVILLE & EASTERN.—*Equipment Trust.*—The Interstate Commerce Commission has approved the issuance of $220,000 6 per cent equipment trust certificates to be sold to the Cleveland Trust Company at 95. The equipment includes 100 70-ton steel hopper cars purchased at a price of $2,200 each from the Diamond Alkali Company, which had them built at a cost of $3,350 each in 1922.

Notes. This company has also been authorized to issue $275,000 7 per cent promissory notes to be issued at various times and to be sold to the Cleveland Trust Company at par. The proceeds are to be used to provide a roundhouse, shop facilities, office space, etc. The carrier is at present using facilities of the Diamond Alkali Company. About two-thirds of the road's stock is owned by persons who are also stockholders of that company.

GAINESVILLE & NORTHWESTERN.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes as of 1916 to be $517,248.

GARDEN CITY WESTERN.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes as of 1916 to be $192,057.

GOLDSBORO UNION STATION COMPANY.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes as of 1914 to be $147,895.

HANOVER.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common-carrier purposes to be $35,182 as of June 30, 1916.

HILLSBORO & NORTHEASTERN.—*Final Value.*—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common-carrier purposes to be $103,895 as of June 30, 1917.

MINNEAPOLIS & ST. LOUIS.—*Receivers' Certificates.*—The Interstate Commerce Commission has granted authority for the issuance of $200,000 receivers' certificates bearing interest at 7 per cent,

the proceeds to be used to refund a certificate of like amount bearing 5 per cent interest and maturing on February 3, 1926. The new certificate will mature on August 3, 1926.

MOBILE & OHIO.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has approved the issuance of $1,200,000 4½ per cent equipment trust certificates, series O, to be sold to Clarke Dodge & Co., at not less than 97. The equipment includes 9 locomotives, 500 box cars and 10 passenger train cars, having a total approximate cost of $1,570,509.

NEW YORK, LAKE ERIE & WESTERN COAL & RAILROAD COMPANY.—*Abandonment.*—This company and the Erie have applied to the Interstate Commerce Commission for authority for the abandonment of a line between Keyler's Corners and Toby Mines, Pa., 2.3 miles.

SEABOARD AIR LINE.—*Control of Tampa Northern and Brooksville & Inverness.*—The Interstate Commerce Commission has approved the acquisition by the Seaboard Air Line of the Tampa Northern by lease, and the acquisition of the Brookville & Inverness by purchase of capital stock and by lease. The permanent basis of control has not yet been determined, and certain terms and conditions are prescribed in the commission's approval. The Seaboard Air Line has a route from Jacksonville to Tampa through Waldo and Wildwood. At Waldo, 135 miles from Tampa, another line diverges and extends to Inverness, a point near Holder. The Tampa Northern extends from Tampa north to Brooksville, 46.56 miles, with a branch from a point near Brooksville to Tooke Lake, 12.31 miles. The Brooksville & Inverness extends from a connection with the Seaboard's Inverness line at or near Holder to a connection with the Tampa & Northern near Brooksville. The two lines thus form a supplementary route to the Seaboard's line through Waldo and Wildwood. The Tampa Northern is controlled by the Seaboard through stock ownership. The Brooksville & Inverness was completed about December 6, 1925. It was shown that on the basis of present traffic, the unified operation of the carriers' lines and the applicant's Inverness line as compared with separate operation of the properties will result in an annual saving of $89,600 in operating expenses and $7,500 in accounting expenses.

SOUTHERN RAILWAY.—*Preferred Stockholders Appeal Denied.*—The Supreme Court of Virginia has denied the writ of error asked by the preferred stockholders, following the dismissal of their action to collect back dividends on preferred stock by Judge Beverly Crump in the Law and Equity Court last June. See *Railway Age* of July 4, 1925, page 66.

Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell $1,774,000 of first consolidated mortgage 5 per cent bonds to provide funds for the redemption of a similar amount of serial mortgage bonds of the Virginia Midland.

SUPERIOR & SOUTHEASTERN.—*Abandonment.*—A certificate has been issued by the Interstate Commerce Commission authorizing this company to abandon operation of that portion of its line in Bayfield and Ashland Counties, Wis., extending from the terminus of the logging railroad of the Edward Hines Hardwood & Hemlock Company, 13.28 miles. The line has been held in operation to permit a lumber company to ship its products, but the lumber company has now cut off its supply of timber.

Dividends Declared

Houston & Texas Central.—2½ per cent, payable April 10 to holders of record April 1.

International Railways of Central America.—Preferred, 1¾ per cent, quarterly, payable February 15 to holders of record January 30.

Nashville, Chattanooga & St. Louis.—3½ per cent, semi-annually, payable February 1 to holders of record January 23.

Virginian Ry.—Preferred, 3 per cent, semi-annually, payable February 1 to holders of record January 23.

Trend of Railway Stock and Bond Prices

	Jan. 19	Last Week	Last Year
Average price of 20 representative railway stocks	94.48	96.93	80.61
Average price of 20 representative railway bonds	94.85	94.69	89.61

Railway Officers

Executive

John Leslie, comptroller of the Canadian Pacific, has been elected vice-president and comptroller. Mr. Leslie was born in Toronto, Ontario, and was educated in the model and normal schools and in the Collegiate Institute. He entered railway work as a junior clerk on the Toronto, Grey & Bruce, successively filling the positions of cashier, general accountant and general auditor. When the railway was taken over by the Canadian Pacific in 1884, Mr. Leslie became chief clerk in the accounting department, and was later appointed auditor of disbursements. He was appointed assistant comptroller in 1908 and comptroller in 1914. Since 1918 he has been in entire charge of the company's accounting department in all its branches.

John Leslie

R. B. White, general manager of the New York division of the Baltimore & Ohio, has been elected senior vice-president of the Central of New Jersey, a newly created position. Mr. White was born at Metcalf, Ill., on August 8, 1883, and received a high school education. He entered railway service in 1900 as a telegraph operator on the Indiana, Decatur & Western (now Cincinnati, Indianapolis & Western). In 1902 he was promoted to train dispatcher at Indianapolis. In 1908 he became chief dispatcher for the Cincinnati, Hamilton & Dayton at the same point and the following year was appointed chief clerk to the general superintendent at Cincinnati. In 1910 he was promoted to superintendent at Indianapolis. Five years later he was appointed to a similar position with the Baltimore & Ohio at Flora, Ill., and he later served in the same capacity at Seymour, Ind., Philadelphia and Baltimore. On April 15, 1921, he was promoted to general superintendent at Baltimore, and in June, 1923, he was appointed general manager of the New York Terminal lines of the Baltimore & Ohio, which position he held until his recent election as senior vice-president of the Central of New Jersey.

R. B. White

C. H. Stein, general manager of the Central of New Jersey, with headquarters at New York, has been elected assistant to the senior vice-president, and the office of general manager has been abolished.

George P. Bagby has been elected vice-president and general solicitor of the Western Maryland, with headquarters at New York.

Maxwell C. Byers has been elected chairman of the board of directors of the Western Maryland, to succeed **Lawrence Greer,** deceased. Mr. Byers will continue to hold his present position as president of the company.

M. F. Longwill, assistant chief engineer of the Wabash, with headquarters at St. Louis, Mo., has been promoted to assistant to the president of the Wabash, with the same headquarters, to succeed **T. M. Hayes,** retired.

Charles Gilbert, president of the Missouri & North Arkansas, has been elected chairman of the board, with headquarters at St. Louis, Mo., and will be succeeded by **W. Stephenson,** vice-president and general manager of the Jonesboro, Lake City & Eastern, with headquarters at Jonesboro, Ark.

Financial, Legal and Accounting

L. O. Humphreys has been appointed assistant secretary of the St. Louis-San Francisco, with headquarters at St. Louis, Mo.

E. O. Mann, assistant treasurer of the Louisiana Railway & Navigation Company, with headquarters at Shreveport, La., has been promoted to treasurer, with the same headquarters.

G. G. Baird, manager of the lands department of the Canadian National, with headquarters at Winnipeg, Man., has been appointed assistant land commissioner, with the same headquarters.

William Mueller, assistant tax commissioner of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been promoted to tax commissioner, with the same headquarters.

G. V. Shoup, who has been promoted to general solicitor of the Southern Pacific, with headquarters at San Francisco, Cal., was born on February 7, 1872, at Bedford, Ia., and entered railway service in August, 1896, in the claims department of the Southern Pacific. In 1901 he was appointed assistant land attorney, which position he held until 1909, when he was appointed attorney in Nevada. From 1909 to 1918 he was an attorney in the law department at San Francisco, Cal., and on the latter date was appointed general solicitor, United States Railroad Administration. He held the latter position until 1920, when he was appointed general attorney, for the Southern Pacific, with headquarters at San Francisco, Cal., which position he has held until his recent promotion.

Guy V. Shoup

Operating

J. C. Murray, vice-president and general manager of the Missouri & North Arkansas, with headquarters at Harrison, Ark., has resigned.

J. C. Stribling has been appointed passenger trainmaster of the South Carolina division of the Seaboard Air Line, with headquarters at Jacksonville, Fla.

I. Reyes Retana has been appointed superintendent of the fuel oil department of the National Railways of Mexico, with headquarters at Mexico City, Mex.

E. F. Rummell, division superintendent on the Chicago, Milwaukee & St. Paul, with headquarters at Spokane, Wash., has been promoted to general superintendent, with headquarters at Butte, Mont., a newly created position.

R. L. Schmid, division engineer of the Atlanta division of the Nashville, Chattanooga & St. Louis, with headquarters at Atlanta, Ga., has been promoted to assistant to the general manager, with headquarters at Nashville, Tenn.

Theron O. Jennings, assistant to the president of the Chicago & Eastern Illinois, with headquarters at Chicago, has resigned to become general coal agent of the Chicago, Rock Island & Pacific, with headquarters in Chicago.

Samuel J. Frazier, who has been promoted to superintendent of the St. Louis-San Francisco, with headquarters at Enid, Okla., was born on May 5, 1886, at Van Buren, Mo., and entered railway service in 1900 as a section laborer on the Kansas City, Fort Scott & Memphis, now a part of the St. Louis-San Francisco. Later he became a telegraph operator on the St. Louis-San Francisco at various stations, including the dispatcher's office at Chaffee, Mo. From 1906 to 1910 he was employed as operator, car clerk, car distributor, and train dispatcher, being appointed chief dispatcher in the latter year. On July 12, 1912, he was transferred from Chaffee, Mo., to Kingsville, Tex., as chief dispatcher, and in December was transferred to DeQuincy, La. In August, 1913, he was appointed night chief dispatcher at Chaffee, Mo., and on March 1, 1914, was promoted to assistant superintendent, with the same headquarters. On February 1, 1923, he was transferred to Ft. Smith, Ark., which position he has held until his recent promotion.

S. J. Frazier

J. W. Whittaker has been appointed superintendent of the St. Johns River Terminal of the Southern, with headquarters at Jacksonville, Fla., to succeed **A. E. Marsh. A. J. May** has been appointed superintendent of the Chattanooga terminal, to succeed **W. E. Wheelock.**

G. B. Matthews, transportation assistant of the St. Louis-Southwestern, with headquarters at St. Louis, Mo., has been promoted to assistant to the vice-president,, with the same headquarters, to succeed **L. E. Hoffman.** Mr. Matthews will be succeeded by **M. J. McNamara.**

A. B. Burpee, train dispatcher of the Canadian Pacific, with headquarters at Medicine Hat, Alberta, has been appointed chief train dispatcher, at Cranbrook, B. C., succeeding **R. J. Collins,** who has been appointed chief train dispatcher at North Bend, B. C. Mr. Collins succeeds **George Hillier,** who has been transferred to Calgary, Alberta.

N. H. Fuller, division superintendent of the Chicago, Milwaukee & St. Paul, with headquarters at Mobridge, S. D., has been transferred to Spokane, Wash., succeeding **E. F. Rummel,** promoted. **H. M. Gillick,** division superintendent, with headquarters at Lewistown, Mont., has been transferred to Mobridge in place of Mr. Fuller. **E. L. Cleveland,** assistant superintendent, with headquarters at Tacoma, Wash., has been promoted to division superintendent, with headquarters at Lewiston, succeeding Mr. Gillick.

E. J. Worden, superintendent of the LaCrosse division of the Chicago, Burlington & Quincy, with headquarters at LaCrosse, Wis., has been transferred to the Brookfield division, with headquarters at Brookfield, Mo. **O. C. Hibbs,** superintendent of the Brookfield division, has been transferred

to the Ottumwa division, with headquarters at Ottumwa, Iowa. **H. D. Brown,** superintendent of the Ottumwa division, has been transferred to the LaCrosse division, with headquarters at LaCrosse, Wis., succeeding Mr. Worden.

W. G. Curren, general superintendent of transportation of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed general manager, with headquarters at New York, succeeding **R. B. White,** elected senior vice-president of the Central of New Jersey. **C. W. Van Horn,** general superintendent of the Maryland district, with headquarters at Baltimore, has been appointed general superintendent of transportation, with the same headquarters, to succeed Mr. Curren. **R. W. Brown,** superintendent of the Cumberland division, with headquarters at Cumberland, Md., has been appointed general superintendent of the Maryland district, with headquarters at Baltimore, succeeding Mr. Van Horn. **H. R. Laughlin,** special representative of the operating vice-president, has been appointed superintendent of the Cumberland division, with headquarters at Cumberland, Md., succeeding Mr. Brown.

Herbert S. Balliet, assistant terminal manager of the Grand Central Terminal, New York City, and signal engineer of the Electric division of the New York Central, has been promoted to engineer of train control for all New York Central lines, reporting to Assistant Vice-president C. C. Paulding, of the law department. Mr. Balliet has been for several years secretary of the New York Central Lines Automatic Train Control Committee, a body consisting of the six signal engineers of the principal roads in the New York Central System. He was born at Neffsville, Pa., on February 26, 1868, and entered railway service in 1883, as a telegraph operator. He served as station agent and train dispatcher; as operator and later in special service for the Western Union Telegraph Company and for a time as operator for the United Press Association. In 1893, he entered railroad service on the Lehigh Valley, and successively for 12 years was batteryman, maintainer, foreman, supervisor and assistant signal engineer. Since March, 1905, he has been at the Grand Central Terminal, New York, first as engineer of maintenance of way and later as assistant terminal manager. He has been signal engineer of the Electric division since May 1, 1907. Mr. Balliet is secretary of the Signal section of the American Railway Association, which office he has held since 1917. He has been active in the work of this section, and its predecessor, the Railway Signal Association, since its earliest years, and was president of the association in 1910. He was a member of the automatic train control committee established by the United States Railroad Administration (1919).

H. S. Balliet

Ralph **C. Miller,** who has been promoted to superintendent of the Schuylkill division of the Pennsylvania, with headquarters at Reading, Pa., was born on December 11, 1878, at Zanesville, Ohio, and was graduated from Ohio State University in 1901, with the degree of civil engineer. He entered railway service on May 30, 1901, with the Pennsylvania at Pittsburgh, and from 1901 to 1906, he was with the engineering corps at Zanesville, Ohio, Pittsburgh, Pa., and Columbus, Ohio. In April, 1906, he became assistant division engineer of the Marietta division and in October, 1907, was transferred to the Logansport division, and was again transferred in June, 1908, to the Columbus division. On January 1, 1913, he became division engineer of the Toledo division, and until the time of his recent promotion, was transferred in that position from the Toledo division to the St. Louis division, the Chicago Terminal division, the Philadelphia division, and the New York division.

Traffic

A. J. Jones has been appointed general agent of the Missouri & North Arkansas, with headquarters at New York.

Pat Lambert has resigned as commercial agent of the Louisiana & Arkansas, with headquarters at Shreveport, La., and the office has been abolished.

W. E. Leech, terminal agent of the Mobile & Ohio, with headquarters at Columbus, Miss., has been appointed general agent, with the same headquarters.

M. P. Davis, commercial agent of the Louisville & Nashville, with headquarters at Kansas City, Mo., has been promoted to general agent, with the same headquarters.

G. O. Anderson, traveling freight agent of the Green Bay & Western, with headquarters at Winona, Minn., has been promoted to general agent, with the same headquarters.

R. Seth McCallen has been appointed freight traffic agent of the New York, Chicago & St. Louis, with headquarters at Chattanooga, Tenn., to succeed **W. H. Hamblen,** deceased.

C. M. Strong, traveling agent of the Minneapolis & St. Louis, with headquarters at New Orleans, La., has been promoted to general agent, traffic department, with the same headquarters.

J. L. Harris, assistant general freight agent of the Chicago & Alton, with headquarters at Chicago, has been promoted to manager of perishable traffic, with the same headquarters, a newly created position.

Ashby Perry, traveling passenger agent of the Southern, with headquarters at Boston, Mass., has been promoted to division passenger agent, with headquarters at Memphis, Tenn., to succeed Frank F. Forth, resigned.

T. M. Smith, district freight agent of the Canadian Pacific, with headquarters at Tacoma, Wash., has been transferred to Seattle, Wash., to succeed **J. W. Draper,** deceased. He will be succeeded by **E. M. Phelps.**

I. R. Malpica, assistant to the passenger traffic manager of the National Railways of Mexico, with headquarters at Mexico City, Mex., has been promoted to assistant passenger traffic manager, with the same headquarters.

A. L. Moore, traveling freight and passenger agent of the Chicago, Burlington & Quincy, with headquarters at Kansas City, Mo., has been promoted to general agent, freight and passenger department, with headquarters at Tulsa, Okla.

W. Stapleton, district passenger agent of the Western region of the Canadian National, with headquarters at Saskatoon, Sask., has resumed his duties, after having been the railroad's representative at the Wembley Exposition at London, England, during the past year.

J. J. Monks, assistant general freight agent of the New York Central, with headquarters at Pittsburgh, Pa., has been promoted to assistant freight traffic manager, with the same headquarters. **R. H. Doutt,** general agent of the Michigan Central, with headquarters at Pittsburgh, Pa., has been promoted to division freight agent of the New York Central, with the same headquarters.

C. L. Netherland, commercial agent of the Illinois Central, with headquarters at Minneapolis, Minn., has been promoted to assistant general freight agent, with headquarters at Memphis, Tenn., to succeed **Hugh Hardin,** who has been transferred to Chicago to succeed **W. M. Penick,** who has resigned to become assistant traffic manager of the United Fruit Dispatch Company at New Orleans, La.

J. H. Norwood has been appointed general agent, freight department of the New York Central, with headquarters at Atlanta, Ga., succeeding **W. F. Greaves,** deceased. **P. F. Eiland** has been appointed general agent, freight department,

with headquarters at Birmingham, Ala., in place of Mr. Norwood. **Edward Hare** has been appointed general agent, freight department, with headquarters at Jacksonville, Fla.

H. E. Ish, district freight and passenger agent of the Southern Pacific, with headquarters at Fresno, Cal., has been appointed district freight agent, with the same headquarters. **T. J. Sundberg,** district passenger agent, with headquarters at Ocean Park, Cal., has been transferred to Fresno, Cal., and will be succeeded by **A. J. Rehwold. H. E. Pierson** has been appointed district passenger agent at Glendale, Cal. **Fred G. Ruthrauff** has been appointed district freight and passenger agent at Ogden, Utah.

R. A. Watson, city ticket agent of the International-Great Northern, with headquarters at Houston, Tex., has been promoted to district passenger agent, with headquarters at Ft. Worth, Tex. **J. C. Woodward,** traveling passenger agent of the Gulf Coast Lines and the International-Great Northern, with headquarters at Houston, has been promoted to district passenger agent of the International-Great Northern, with headquarters at San Antonio, Tex., to succeed **A. R. Fox,** who has been transferred to Houston.

R. E. Smith, who has been promoted to assistant general freight agent of the Northern Pacific, with headquarters at St. Paul, Minn., was born on November 11, 1885, at St. Paul, Minn., and entered railway service on July 1, 1902, with the Northern Pacific. He held various clerical positions in the office of the general traffic agent until May, 1911, when he was appointed contracting freight agent at Minneapolis, Minn. He held that position until February, 1902, when he was promoted to traveling freight agent, with headquarters at St. Paul, Minn. In April, 1924, he was promoted to chief clerk in the general freight department at St. Paul, and on September 1, 1925, was promoted to assistant to the freight traffic manager, with the same headquarters, which position he has held until his recent promotion.

N. E. Kerns, commercial agent of the Chicago, Burlington & Quincy, with headquarters at Lincoln, Neb., has been promoted to division freight agent, with the same headquarters, succeeding **E. E. Grimes,** who has been appointed general livestock agent, lines west of the Missouri river, with the same headquarters, succeeding John Petrie, deceased. **G. A. Shields,** division freight and passenger agent, with headquarters at Quincy, Ill., has been appointed division freight agent with headquarters at Rock Island, Ill., to succeed **H. W. Crawford,** deceased, and will be succeeded by **B. R. Newlon,** freight agent, with headquarters at Streator, Ill. **E. L. Speer,** commercial agent, with headquarters at Atchison, Kan., has been promoted to division freight and passenger agent, with headquarters at Hannibal, Mo., to succeed **T. L. Lawrence,** deceased.

Frank F. Farrar, who has been appointed general freight agent of the Boston & Maine, with headquarters at Boston, Mass., was born on February 28, 1881, at Wayland, Mass., and received a high school education. He entered railway service in June, 1898, with the Fitchburg (now Boston & Maine) as a messenger boy and clerk in the local freight office at Warren Bridge, Boston. On January 1, 1909, he became contracting agent for the Boston & Maine, and on November 1, 1910, special agent. He became traveling freight agent on January 1, 1914, and assistant general agent in June, 1916. From October 2, 1916, to March 1, 1920, he was commercial agent, and on the latter date became general agent. On January 1, 1922, he became assistant general freight agent, which position he was holding at the time of his recent appointment to general freight agent.

Mechanical

Charles E. Barba has been appointed mechanical engineer of the Boston & Maine, with headquarters at Boston, Mass., succeeding **Carl B. Smith,** who has been appointed assistant to the mechanical superintendent, with the same headquarters.

P. W. Kiefer, who has been appointed chief engineer of motive power and rolling stock of the New York Central, with headquarters at New York, entered railway service as an apprentice in the mechanical department of the Lake Shore & Michigan Southern (now a part of the New York Central) and in 1916 he entered the equipment engineering department. He later served as locomotive designer and as leading draftsman and later worked on dynamometer car tests. In July, 1920, he was promoted from the position of chief draftsman on locomotives in the equipment engineering department to the position of assistant engineer in the office of the engineer of rolling stock. In March, 1923, Mr. Kiefer was promoted to assistant engineer of rolling stock and in May, 1924, he was promoted to engineer of motive power of the Lines East and West. In January, 1925, he was promoted to engineer of rolling stock, which position he held until his recent appointment as chief engineer of motive power and rolling stock.

Engineering, Maintenance of Way and Signaling

H. E. Yeoman, assistant engineer on the Dakota division of the Great Northern, has been promoted to division engineer of the Dakota division in charge of maintenance and engineering, with headquarters at Grand Forks, N. D.

John Lansdale has been appointed valuation engineer and tax commissioner of the Southern Pacific, Lines in Texas and Louisiana, the offices and duties of valuation engineer and tax commissioner having been consolidated.

J. P. Anderson, assistant engineer of the Atlanta division of the Nashville, Chattanooga & St. Louis, with headquarters at Atlanta, Ga., has been promoted to division engineer of the Atlanta division, to succeed **R. L. Schmid,** promoted.

Special

H. S. Phillips, superintendent of personnel of the St. Louis-Southwestern, with headquarters at Tyler, Tex., also has been appointed superintendent of safety.

C. W. Y. Currie, managing editor of the New York Central Lines Magazine, has been appointed also assistant publicity manager, with headquarters at New York.

H. B. Rogers, agricultural agent of the Erie, with headquarters at Jamestown, N. Y., has been promoted to chief agricultural agent, with the same headquarters, to succeed **L. D. Fuller,** resigned.

Obituary

F. J. Heid, assistant general passenger agent of the Atchison, Topeka & Santa Fe, Coast lines, with headquarters at Los Angeles, Cal., died on January 11 in that city.

Frank C. Webb, formerly division superintendent on the Colorado & Southern, and later assistant superintendent on the Great Northern, who left railway service in July, 1901, to engage in the railway supply business at Denver, Col., died in that city on January 12.

T. H. CARROW, chairman of the committee on statistics of the safety section, Operating division, of the American Railway Association, has issued a circular calling attention to the accident record for September, as compiled by the Interstate Commerce Commission, and warns the members of the association that casualties are increasing in undue proportion, and that greater effort must be put forth; otherwise the five per cent reduction in the frequency of accidents which has been set as a goal, for 1926, will not be attained. The total number of employees (on duty) killed in train and train service accidents in September was 87, and of injured 2,836; and the total of killed and injured is 15.9 per cent greater than in September one year ago; whereas the increase in total locomotive miles is only 3½ per cent. With the current increase in business an increase in accidents was to be expected; but not in such large proportion. The "goal" mentioned by Mr. Carrow is based on the vote of the safety section at Salt Lake City in 1924, when it was proposed that a general movement should be started to reduce accidents to employees by 35 per cent during the next ensuing seven years.